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ON THE

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Delivered before the Royal College of Physicians of London

BY J. ALISON GLOVER, O.B.E., M.D. CAMB., M.R.C.P. LOND., D.P.H.,

A MEDICAL OFFICER OF THE MINISTRY OF HEALTH.

LECTURE II.—RHEUMATISM IN INDUSTRY.*

(Delivered on March 4th.)

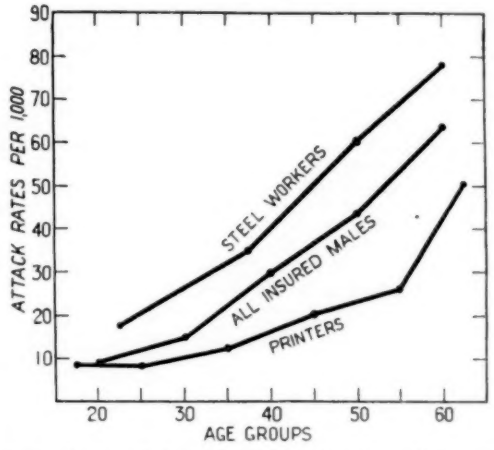
THE incidence of the various forms of chronic rheumatism, and especially the incidence of the non-articular forms (or fibrositis) is a problem in which mortality statistics, notifications, service returns, or hospital admissions will help us little; we shall have to depend mainly upon material derived from insurance statistics, to which we owe the surprising revelation of the extent of the morbidity and invalidity classified as rheumatism. As long ago as 1881, however, Dr. August Hirsch [1] estimated that the number of patients suffering with "rheumatism" seen in the dispensary practice in many parts of England amounted to 5 per cent. of the total patients seen, and the substantial accuracy of this estimate has been many times confirmed by later workers.

Some of these estimates are worthy of mention as dealing with different classes of patient. In 1911 the Local Government Board [2] found that of all paupers† receiving institutional or outdoor medical relief 7 per cent. were receiving medical treatment on account of rheumatism or gout, compared with 10·7 per cent. for bronchitis or pneumonia, 7·8 per cent. with paralysis and diseases of the brain, and 5·6 with pulmonary tuberculosis. Sir George Newman [3] in 1919 estimated the proportion in general insurance practices at 6·6 per cent., Sir James Mackenzie in 1920 at 6 per cent. in ordinary practice, D. K. Burndage [4] in steelworkers in Pennsylvania at 6·4 (includes lumbago), whilst in the Ministry's investigation [5] of 1922 it was 5·9. The latest estimate [6] for insurance practice is higher, being 9·8 per cent. in insurance practice in 1928.

We shall see later that probably more than four-fifths of these rheumatic patients would be suffering from chronic rheumatic diseases, and less than a fifth of them with what we classify as acute and subacute rheumatism. But if 5 per cent. approximately represents the proportion who suffer with rheumatism of all patients seen in ordinary practice, the proportion of invalidity (measured by duration of sickness) due to rheumatism is much higher—three times as great, or about 14 per cent. of the total duration of all industrial sickness.

In 1921 one of the largest approved societies showed from an analysis (unpublished) extending over a period of six months that 14·8 per cent. of all their sickness and disablement benefit had been paid on account of rheumatism. In 1922 an inquiry was arranged by the Ministry into the various forms of so-called rheumatic disease in relation to the age, sex, occupation, and environment of insured persons, and into the economic importance of these several diseases as measured by their production of sick absence. From this investigation it was estimated that in insured males rheumatic diseases caused just under 16 per cent. of the total sickness and disablement due to all diseases, and that the corresponding percentage for female insured workers (far more of whom are in the younger age-groups) was about 14 per cent. The accuracy of this estimate has just been confirmed by a recent investigation into the experience of a group of large approved societies, with a total membership exceeding 3,000,000 during the quinquennium 1921–25. This has not yet been published, but by the courtesy of the societies concerned I am allowed to quote some of the valuable data referring to rheumatism. Perhaps the most interesting is that this vast experience, in years at risk more than 150 times as great as ours, confirmed the substantial accuracy of the main finding of the Ministry's investigation and showed that rheumatic diseases among both males and females accounted for 14 per cent. of the total sickness and disablement, a figure almost identical with that of the Ministry's investigation, although the methods used were different and the data obtained in different ways. I shall hereafter take 14 per cent. to be the correct estimate for the proportion of rheumatic invalidity to total invalidity.

FIG. 1.



Attack-rates for all rheumatic diseases (except gout) in various age-groups and trades.

These investigators of the approved societies' experience, like the majority of English, American, and continental workers on the subject, have dealt only with industrial "rheumatism" as a whole. The diseases included under "rheumatism" vary somewhat with each investigation, the most important variation depending on the inclusion or exclusion of gout. Other unnecessary difficulties are caused by differences in the age-grouping selected, and by some investigators including disablement as well as sickness benefit, whilst others exclude disablement. Dr. A. B. Hill's [7] morbidity group "rheumatism" when he dealt with sickness in the printing trade may be taken as an example; it includes rheumatism, sciatica, lumbago, perichondritis, myositis, synovitis, bursitis, arthritis, fibrositis, myalgia, and torticollis.

Statistics relating to such a vague mass of disease are of limited utility; they reveal mainly the financial importance of the group and throw some light on occupational incidence.

OCCUPATIONAL INCIDENCE OF RHEUMATISM.

This demands an immense population at risk for its proper investigation. The only occupational feature which clearly emerged in the Ministry's inquiry [8] was the heavy incidence of all forms of rheumatic disease upon the workers in metals (nearly 80 per cent. in excess of expectation). Metal workers probably suffer risks of chill and trauma more than other workers, and some of the heavy metal trades

* This lecture was illustrated with many diagrams. Lecture I. appeared in THE LANCET of March 8th.

† Total 188,364, 87,895 being outdoor: 12,944 cases of rheumatism and gout.

involve, sometimes perhaps needlessly, exposure to weather.

The work of Dr. H. M. Vernon [9] and Mr. A. E. Rusher upon the sickness records of 24,000 steel and iron workers during a period of six years showed that puddlers among the steel workers were especially susceptible to "rheumatism" (two-thirds of which was probably fibrositis). They point out that puddlers' work in couples and put in alternate periods of very strenuous puddling during which they perspire freely, and then during the intermediate periods sit about usually in a draught. Men, such as the tin-plate mill men, whose work, though hot, is continuous, seldom taking rest pauses of more than four minutes, show no excess of rheumatic diseases.

If we now compare Dr. Rusher's results with steel workers with those for printers by Dr. Hill, or with those for insured males generally from the Ministry's investigation (although we are handicapped by the difference in age grouping and by the omission of disablement from the steel-workers' rates) we shall see from Fig. 1 that while the printers have rather less rheumatism than insured males generally (a somewhat unexpected result to me), the steel workers have an excess, especially in the young groups, large enough to be significant. (Table I.)

TABLE I.—*Rheumatism (all kinds but excluding Gout). Attack-rates per 1000 per annum.*

(*a*) Steel workers.[8]	(*b*) Printers.[7]	(*c*) Insured males, all occupations.
A. E. Rusher.	A. B. Hill.	Ministry investigation
(16–29) 17·6 [0·3]	(16–19) 9 [0·26]	(16–24) 9 [0·27]
	(20–29) 8·3 [0·17]	
(30–44) 35 [0·7]	(30–39) 12·7 [0·31]	(25–34) 15 [0· 3]
	(40–49) 20·2 [0·69]	(35–44) 30 [0·92]
(45–54) 60·3 [1·3]	(50–59) 26·5 [0·83]	(45–54) 44 [2· 1]
(55–69) 78·5 [1·9]	(60–69) 50·3 [4·58]	(55–64) 64 [3· 9]

Figures in brackets show days of rheumatic sickness or disablement per person—year.

(*b*) and (*c*) include "disablement" as well as "sickness,"[1] (*a*) excludes "disablement." This makes no appreciable difference in the three youngest age-groups but somewhat increases "the days of sickness" figure after 40 years and trebles it in the printers column (*b*). The small days of sickness in the older steel workers is due to the exclusion of disablement.

Dr. Hill's figures for the printers show them not only freer from rheumatic diseases than insured males generally, but substantially better than the printing trade in Leipzig [10] a quarter of a century ago, although in Leipzig the printing trade compared favourably in rheumatism with the insured workers as a whole. In Moscow, 1928, Danischewski [11] found great occupational variation in incidence. Thus the attack-rate for all kinds of rheumatic diseases for all trades was 42 per 1000, office workers being 13, crude metal workers 42, peatworkers 49, colliers 61, locomotive personnel 81, "hot trades" 86, "cold trades" 70 per 1000. The corresponding English all-trade male figure is 31 per 1000 and for Denmark 30 per 1000.[12]

NOMENCLATURE.

But these undivided industrial attack-rates for "rheumatism" reveal to us little save their magnitude, for under the term are included entirely different diseases—one almost certainly an acute infectious disease, another a group of diseases including various inflammations of white fibrous tissue throughout the body, whilst a third group comprises those insidious and crippling maladies which involve chronic derangement of joint structure, some of these being again divisible into various subgroups or types. To get further, we must sort out industrial rheumatism into its component diseases by some agreed and uniform working classification. After the estimation of the whole rheumatic invalidity, this sorting out process was the second principal aim of the Ministry's investigation, carried out in 1922 by 50 insurance practitioners acting as voluntary observers for the Ministry in various parts of the country. A fact which gave it one great advantage over previous collective inquiries into rheumatism was that the "population at risk" was known, as it comprised the aggregate lists of these practitioners, some 91,000 persons. The second great advantage which this investigation enjoyed was the use of a uniform classification. The records of 2510 cases were sent in by the practitioners, and in addition as a separate investigation 6000 cases were reported upon by the Regional Medical Officers of the Ministry. As I have drawn freely upon the results of this inquiry, it is only right that I should acknowledge my indebtedness to those 50 practitioners.

One difficulty of the inquiry was classification. In no other group of diseases is nomenclature so confused as in the group of chronic "rheumatic" diseases.

Especially in dealing with chronic arthritis has the lack of an accepted classification been a handicap to our knowledge of the incidence of its various forms. Until more definite knowledge is obtained of their pathology and causation their scientific classification is impossible, but, owing to the lack of agreement even on a broad working classification, to be used by text-books, teachers of medicine, medical men, and insurance officials, there is much totally unnecessary confusion, and the huge mass of data which might be obtained from national insurance is now rendered almost worthless by its collection under the single head of "rheumatism."

The whole subject of the incidence of the various kinds of chronic rheumatism is thus inseparably bound up with this question of classification.

Special difficulty has been experienced with the terms rheumatoid arthritis and osteo-arthritis, which have led to much confusion, as they have been used indiscriminately by writers in at least seven different ways, including the most usual way, which is to use them as synonyms. These seven variants I have discussed in my reports, and they need not delay me further, but, as one example of the lax use of these terms, I was assured at the physical treatment department of one great general hospital in London that any case of chronic arthritis of the knee, if sent for treatment by a physician, was invariably sent as a case of rheumatoid arthritis, but if the same type of case was sent by a surgeon it almost invariably came with the diagnosis of osteo-arthritis.

The first essential for such an inquiry as that of the Ministry into the incidence was, therefore, a clear and agreed classification. The classification selected divided the rheumatic diseases into three broad groups, A, B, and C, which were further subdivided into nine diseases. (Table II.)

As regards rheumatoid and osteo-arthritis, Hale-White's [13] symptomatology is followed, but a more extended differential diagnosis will be found in my report on Chronic Arthritis, and in the table [14] reproduced therefrom in THE LANCET (1928, i., 1245).

The Ministry's classification has inevitable shortcomings. Rheumatoid arthritis probably contains several different types, Strangeways [15] describing six, others being content with two or three. One type should, however, be mentioned, since, from its peculiar intractability to treatment, it has in no small measure helped to produce the pessimistic frame of mind with which the majority of the profession and laity alike have been wont to regard all chronic arthritis, many forms of which are, fortunately, much more amenable to treatment. Milton may have had this type in mind when he speaks in "Paradise Lost" (XI., 486) of "pining atrophy" "and joint-racking rheums," with "Despair tending the sick." This singularly acute and intractable form of rheumatoid arthritis occurs, for the most part, in quite young women; the initial attack is usually particularly severe, and the resemblance to rheumatic fever unusually close. A recognisable focus of infection is seldom seen in this form of the disease, and little or nothing is known of its ætiology.

To one who has to think in terms of prevention, perhaps the most important criterion is that which

divides rheumatoid arthritis, and, indeed, all chronic arthritis, into two types, the first, those like the very acute form I have just mentioned, in which there is no discoverable focus of infection, and the second, those in which there is a demonstrable focus. The latter, according to Pemberton,[16] amount to 70 per cent. of the whole.

The ninth category, the "unclassifiable chronic arthritis," is, of course, a confession of failure. The late Dr. Strangeways maintained that 15 per cent. of any series of cases of chronic arthritis would prove unclassifiable in any classification. As a matter of fact, our practitioner observers left only 11 per cent. of their 630 cases in this limbo, whilst the Regional Medical Officers, who, indeed, spend their life determining doubtful cases, left only 2 per cent. of 1120

TABLE II.

GROUP A.	
1. Rheumatic fever (acute rheumatism).	Usual text-book description.
2. Subacute rheumatism (including rheumatic purpura).	=a mild attack of acute rheumatism; pyrexia not exceeding 101°, responding to salicylate treatment; often accompanied by endocarditis; without chronic joint deformities.
GROUP B.—*Non-articular Manifestations.*	
3. Muscular rheumatism (myalgia), including fibrositis, pleurodynia, and torticollis, but excluding lumbago.	Symptoms of characteristic pain, aching and stiffness sometimes accompanied by physical signs of thickening of the fibrous tissue and by the presence of nodes.
4. Lumbago.	Myalgia of the erector spinæ muscles (separated for classification from No. 3 as being an easily distinguishable clinical entity and on account of its occupational interest).
5. Sciatica and brachial neuritis.	
GROUP C.—*Chronic Joint Changes.*	
6. Rheumatoid arthritis (infective periarthritis).	Usually with an acute *initial attack of pyrexia* of considerable length; *many smaller joints* usually affected, especially first and second phalageal joints, *spindle-shaped joints*, the temporomaxillary joint is often affected; changes mostly *periarticular* often accompanied by much fibrositis; lesions often bilaterally symmetrical; nutrition of patient almost invariably bad; patients usually females.
7. Osteo-arthritis, including malum coxæ senilis.	Usually afebrile; gradual onset, often at first confined to one large joint, *fewer and larger* joints affected, especially knees and hips; *grating; lipping, eburnation, osteophytes;* lesions often asymmetrical; patient usually well nourished.
8. Gout.—(*a*) Acute. (*b*) Chronic.	Usual text-book description. Polyarthritis with a definite history of repeated attacks of acute gout or the presence of tophi.
9. Chronic joint changes unclassifiable.	Chronic joint changes which cannot be allocated to any of the above.

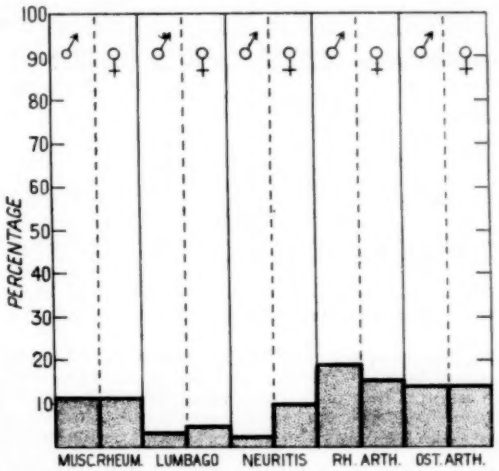
male cases and 3 per cent. of 1494 female cases of chronic arthritis thus unclassified. The classification in its three groups, and nine diseases, shown in Table II., notwithstanding its imperfections, worked well in the inquiry, and was afterwards recommended as a working classification for international use, pending further ætiological knowledge, by the International Committee on rheumatism.

The rheumatoid arthritis category of our classification corresponds generally with the "proliferative" type of arthritis of Nichols and Richardson,[17] now perhaps more generally called "atrophic arthritis" in America, whilst our "osteo-arthritis" corresponds to the "degenerative" type of Nichols and Richardson now more generally there called "hypertrophic" arthritis. On the continent our rheumatoid arthritis syndrome is usually described as "primary chronic arthritis," though cases (which seem commoner in some countries than in England), in which typical attacks of acute rheumatic fever seem, instead of clearing up as usual, to pass immediately in a progressive form of chronic arthritis, are termed "secondary chronic arthritis."

RELATION OF ACUTE AND CHRONIC RHEUMATISM.

Looking at such a classification as the Ministry's, perhaps the first question is, what, if any, is the connexion of the other "rheumatic" diseases with acute rheumatism? Can we for example, as students of preventive medicine, hope that the reduction in incidence and severity, which has taken place in acute rheumatism, will result in some reduction in chronic rheumatic diseases. Some observers from the histological similarity of the nodes found in many forms of chronic rheumatism to those found in acute rheumatism, from the association of *Streptococcus viridans* with both, and from the occurrence of cases which the French term "secondary chronic arthritis" (i.e., of patients passing from acute rheumatism directly in a rheumatoid condition), these would have us consider that all are but different manifestations of the same infection. But to this view these are serious objections. One is the small percentage of cases of chronic rheumatism in which there is any history of acute rheumatism. Fig. 2 shows this well. Another, perhaps greater, difficulty is that the chronic rheumatic diseases are not as a rule accompanied by carditis. One section of rheumatoid arthritis patients, perhaps one-fifth of the whole, are an exception and sometimes show carditis; these may have originated in acute rheumatism, and form the "secondary chronic arthritis" of the continent, whilst some of the muscular rheumatism section may be in reality subacute rheumatism. So that whilst one-fifth of our cases classified as rheumatoid arthritis and some of our muscular rheumatism cases may have some real connexion with acute rheumatism perchance being a direct sequel, it seems fair to say that the rest of the non-articular "rheumatic" manifestations have little relationship to acute rheumatism, but that lumbago and sciatica on the other hand, as known for many years (but recently brilliantly revealed by Putti [18]), have the closest ætiological connexions with osteo-arthritis. Their association with gout, too, has long been recognised. It is by no means unusual for the life-history of one patient to illustrate all the non-articular manifestations and finally osteo-arthritis. I shall refer again to this in my next lecture.

FIG. 2.



The stippled areas show the percentage of patients in various disease groups who give a history of previous acute rheumatism.

Rheumatism in Insurance Practice.

Now armed with this rough practical classification as with a spectroscope, let us see how our observers in 1922 divided "industrial rheumatism" into its component diseases.

Perhaps we can best visualise this spectrum of industrial rheumatism in terms of attack-rates per 1000 of all ages by supposing a practitioner to have a practice consisting of 1000 insured males and 1000 insured females. Of this "population at risk" of 2000 insured persons of all ages over 16 years of age, our experience suggested that about 46·5 per cent., or 930 patients, would seek medical advice with regard to all illnesses during a year, and of these 930 patients some 55 (or 5·9 per cent.) would be treated for rheumatic diseases in the following proportions:—

Table IV.

Groups.		—	Insured males.	Insured females.
Acute rheumatic.	A	Acute rheumatism ..	1	2
		Subacute " ..	3 = 4	3 = 5
Fibrositis ..	B	Muscular rheumatism	6	7
		Lumbago	10	3
		Sciatica or brachial neuritis	3 = 19	1 = 11
Chronic arthritis	C	Rheumatoid arthritis	1	3
		Osteo-arthritis ..	3	2
		Gout	3	0
		Unclassifiable arthritis ..	1 = 8	1 = 6
Total "rheumatic" disease ..			33*	22
			55	

* Discrepancy due to omission of decimal points.

In the groups A and B the figures may be taken as rough attack-rates for all ages above 16 per 1000 per annum, but with the chronic group it must be remembered that as these diseases persist and require treatment for years the figures are not annual attack-rates.

So much for our spectrum of insured "rheumatic" patients. Now let us subject our total rheumatic insured invalidity (measured by duration of rheumatic sickness) to the same test. It will be recalled that it amounts to 14 per cent. of the total insured sickness and disablement.

The relative economic importance of each disease can be measured by the sick absence produced by that disease, expressed as a percentage of the whole sick absence due to all rheumatic diseases. For males, osteo-arthritis is easily the largest producer of sick absence, with 22 per cent. of the total; next is rheumatoid arthritis with 17 per cent.; then muscular rheumatism with 12 and gout with 11; lumbago comes lower than might be expected from the vast number of patients with 11 per cent.; subacute rheumatism with 10 per cent.; sciatica with 9 per cent. Unclassifiable chronic joint change diseases are responsible for 5 per cent. and acute rheumatism for only 4 per cent. of the total "rheumatic" sickness. Among the females, partly no doubt owing to the younger age distribution, the acute group is much more prominent than in the males, and causes exactly the same amount of sick absence as the non-articular manifestations group, which is considerable on account of the large amount of sickness caused in females by muscular rheumatism.

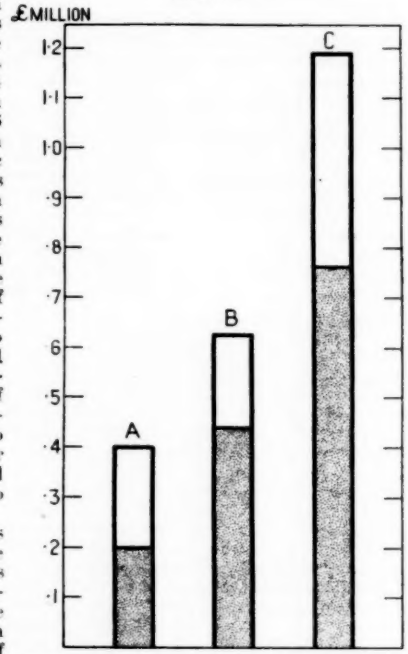
Of the separate diseases rheumatoid arthritis causes by far the most sickness, with 30 per cent. of all female rheumatic sick absence.

For both sexes together, rheumatoid arthritis and osteo-arthritis are nearly equal and far ahead of the other rheumatic diseases as producers of incapacity for work, and the proportions of sick absence produced by the acute group, the non-articular group, and the chronic joint change group respectively are nearly in the proportion 2 : 3 : 6. That is to say, chronic joint diseases cause twice as much incapacity for work as muscular rheumatism, fibrositis, lumbago, and sciatica combined, and three times as much as acute and subacute rheumatism, and when this is translated into sickness and disablement benefit we see in Fig. 3 the cost of each group in each sex to the approved societies.

Here I must point out that insured females have a much younger age distribution than insured males, in that 45·6 per cent. of insured females are between 16 and 25, and 72·7 ‡ per cent. under 35 years of age (compared with 26 per cent. and 51·6 per cent. respectively of insured males). Many women drop out of insurance on marriage.

This young age distribution of insured females makes disease statistics relating to the insured female population a much less valuable guide to the incidence of diseases upon the whole female population, for these young age-groups are relatively almost immune from the chronic rheumatic diseases. The proportion of rheumatic sick absence per person increases rapidly as age advances — a man of 55–64 having on an average 16 times as much rheumatic sickness as one between 16–24. It is therefore essential when studying the incidence of chronic rheumatism to bear in mind the age-grouping of the population, and to examine our material divided into age-groups.

Fig. 3.



Estimated relative cost in benefit of the several "rheumatic" disease groups during 1928. A = Rheumatic fever (acute rheumatism) and subacute rheumatism. B = Fibrositis. C = Chronic joint stages. The stippled areas represent males.

Fig. 4 shows the male attack-rates at each age-group of the three main divisions of rheumatic diseases, and so much more common are the chronic diseases that I have put the attack-rates of the acute group in on a scale ten times larger than the two chronic groups.

It will be noticed at once the fundamental difference that the incidence of the acute group falls with increasing age, whilst the two chronic groups rise steeply with advancing age. The attack-rates of the various forms of fibrositis and arthritis have a strong general resemblance—a slow gradual rise in young adult life until the age of 45 is reached, when there is a sudden and pronounced upward jump. After 65 there is another violent upward movement due to the degenerative senile processes, but the rise after the age of 45 is, I think, quite clearly due to something that is not senility, but which may be probably due to endocrine changes, particularly those connected with the menopause in women. Llewellyn [19] says:—

"The tendency of rheumatism to change its *facies* at puberty, the predilection of rheumatoid for the reproductive period, and of osteo-arthritis and gout for the

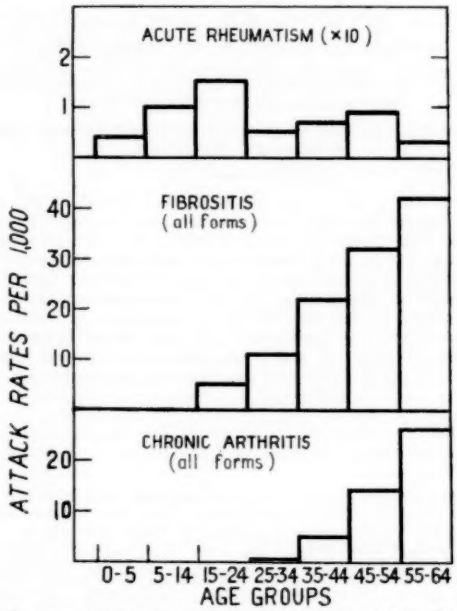
‡ Details to be found Report 235, p. 15.

menopause or pre-senile period are connected with the endocrine changes associated with those epochs."

INCIDENCE OF NON-ARTICULAR RHEUMATISM.

I shall now briefly estimate the incidence of the group of non-articular rheumatic diseases, muscular rheumatism, lumbago, and sciatica and brachial

FIG. 4.



Attack-rates from acute rheumatism (×10 scale), fibrositis and chronic arthritis among insured males of various age-groups.

neuritis. That they are very common is a matter of common knowledge, and indeed as regards the numbers of patients they are diagnosed in nearly two-thirds of all male rheumatic patients and more than half of all female rheumatic patients.

Table IV. gives the approximate annual attack-rates for the four diseases found in the Ministry's inquiry for insured persons. Here we shall again see that whilst the male rates are probably fairly representative of males in England and Wales, the female rates are much less representative of the female population as a whole.

TABLE IV.—*Annual Attack-rate per 1000 Insured Persons in each Age-group.*

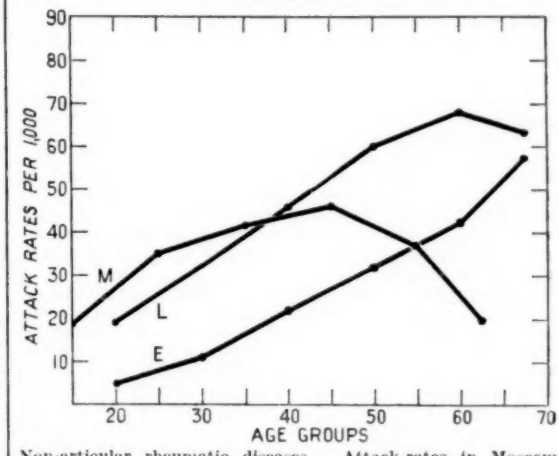
	Age-group—					All ages.
	16 to 24	25 to 34	35 to 44	45 to 54	55 to 64	
Muscular rheumatism.						
Men ..	3	4	7	9	11	6
Women ..	4	6	10	16	18	7
Lumbago.						
Men ..	2	6	12	18	22	10
Women ..	1	2	4	11	12	3
Sciatica.						
Men ..	0·1	1·2	2	4	6	2·4
Women ..	0·1	0·3	1	1	5	0·6
Brachial neuritis.						
Men ..	0·06	0·06	0·5	1	2	0·5
Women ..	0·3	0·5	1·5	4	1	0·8

Several points of interest emerge. Contrary to the opinion of many authorities who say that the disease is more (three times as) common in men, the female attack-rate for muscular rheumatism is at all ages higher than the male rate. Lumbago, however, upholds the ordinary view, the male attack-rate being far greater at all ages than the female. In the youngest group it is double, in the 25–34 group exactly three times, in the 35–44 group three times as great as the female, over middle age it is nearly twice the female attack-rate.

For sciatica and brachial neuritis together the male attack-rate is generally substantially higher than the female, the difference being entirely due to the male liability to sciatica. Later on it will be seen that in brachial neuritis the female attack-rate is much higher than the male up to 55, after which there is an increase in the male rate. It may be observed here that for sciatica alone the ratio of male to female cases as expressed by the attack-rates for all ages 2·4 per 1000 males to 0·6 per 1000 females, is almost exactly the 4 to 1 ratio given by Gowers,[20] which, he adds, forms a remarkable contrast to the analogous affection of the arm. For the latter, the attack-rate for males of all ages proved to stand to the female attack-rate as 0·5 to 0·8 per 1000, or very nearly as 2 is to 3.

To see how heavy an incidence these attack-rates really represent, let us suppose they apply equally to

FIG. 5.



Non-articular rheumatic diseases. Attack-rates in Moscow 1928 (M), Leipzig 1887–1907 (L), and England 1922 (E), insured males.

all men and women of corresponding age in England and Wales instead of applying only to insured persons.

There are some 12,752,000 males and some 14,171,000 females in England and Wales between the ages of 15 and 65—what may be called the working half century of life. If we divide them in their age-grouping as given us by the Registrar-General, and apply the insured attack-rates, we should expect to find just a quarter of a million cases of fibrositis in each sex, cases, that is, of sufficient severity to cause the patient to consult his or her medical adviser. Dividing this fibrositis morbidity into its several parts, it represents at a rough estimate that we should expect to find yearly in all England and Wales 78,000 men and 138,000 women suffering with muscular rheumatism; 131,000 men and 72,000 women with lumbago; 35,000 male cases of sciatica and brachial neuritis, and nearly 33,000 female cases of the same. Many cases would be comparatively slight and transient.

One point which should be noted is that the sex variations are well seen in the young age-group—i.e., before the usual age of onset of osteo-arthritis, with which sciatica, and to a somewhat less extent lumbago, are so intimately connected, and before the possible endocrine influences of the menopause can have any effect. The sex- and age-incidence represented by

these attack-rates can be tested in two ways, first, by comparison with the age-incidence of previous series, such as Llewellyn's [21] for the three diseases, and secondly, by comparison with foreign attack-rates from one or two sources.

The age-incidence of the cases in the Ministry's inquiry agreed well with Llewellyn's [21] series as regards male patients when both are expressed as percentages.

German and Russian Statistics.

Llewellyn's figures do not, of course, permit of any estimation of attack-rates, as the population at risk was unknown, so that a closer comparison is with foreign statistics grouped in age-groups as are our own. Only two of these appear drawn up in forms at all comparable to our own inquiry, the monumental Leipzig statistics [10] (1887 to 1907) and the recent work of Danieschewski [11] in Moscow.

The non-articular manifestation group of diseases in our inquiry afforded an interesting comparison with the muscular rheumatism category of the Leipzig statistics, as the two categories comprise almost exactly the same set of diseases. The Leipzig category had for its main heading the term "muscular rheumatism," and included also lumbago, sciatica, and "sacral pains," so that, with the possible exception of brachial neuritis, it appears exactly to correspond with our non-articular manifestation group. The Leipzig attack-rates for this group of diseases were much higher than ours for both sexes, and at every age-group, and their days of sickness per 1000 workers in every age-group (except the two oldest age-groups, where their limitation of benefit no doubt prevents this) were much in excess of ours; but up to 45 their mean length of attack was considerably less than ours.

The comparison with the Moscow morbidity (Fig. 5) shows the English rate to be much lower for males in the young age-groups, but the female rates are very similar. For some reason I do not know, the two oldest decades evidently introduce some factor rendering the figures not comparable with either ours or those of Leipzig (Fig. 5).

The comparison with these foreign statistics is not, of course, completely fair or valid owing to great differences in the methods of collection of material, but it would, perhaps, seem fair to assume that there was considerably less non-articular rheumatic disease in England and Wales in 1922 than in Leipzig in the years from 1885 to 1903, or in Moscow in 1928. Comparison with Moscow is, however, puzzling. For men of all ages the Moscow attack-rate is 28 per 1000 compared with our rate for insured men of all ages of 19 per 1000; women of all ages in Moscow show an attack-rate of 13 per 1000 compared with one for English insured women of 11 per cent. Yet at the younger ages the Moscow experience is much higher than ours, whilst for the older groups it is much lower, quite impossibly low, it seems, on medical grounds, and there probably is some non-medical factor—e.g., some condition of insurance operating here—which renders the statistics not comparable with ours, or with Leipzig, in these two older age-groups.

Seasonal Incidence.

The seasonal incidence of fibrositis corresponds generally with that of acute rheumatism having a high winter prevalence, with peaks in November and February in Europe, the November peak not being usually present in America. There is a summer minimum usually in July. In sciatica it seems that the autumn rise occurs a good month earlier than in the other rheumatic diseases.

I shall discuss the implications of this large incidence of the various forms of fibrositis together with that of arthritis in my next lecture.

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(*Continued at foot of next column.*)

DISSEMINATED SCLEROSIS.

PATHOLOGICAL AND BIOCHEMICAL CHANGES PRODUCED BY A "VIRUS" CULTIVATED FROM THE CEREBRO-SPINAL FLUID.

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SOON after the fact seemed well established by Miss Chevassut that a virus was constantly found in the cerebro-spinal fluid (C.S.F.) in disseminated sclerosis (D.S.), and that this virus was consistently absent in normal C.S. fluid and from C.S. fluids in other pathological conditions of the nervous system, it was decided to try the effect of injections of cultures of this virus into animals. At first these injections of culture were of unknown strength, but it later seemed desirable to be able to estimate the approximate strength of our cultures.

Method of Estimating Strength of Virus Suspension.

A method was devised by one of us (J. A. B. H.) as follows:—

An ordinary platinum loop is made and the loop is carefully kept, so that its volume is constant. This loop is used for removing all suspensions or drops of broth culture in the subsequent estimations. The number of drops required from this loop to make up 1 c.cm. is not a difficult problem. This is the first factor in the calculation, and it has to be worked out each time a new loop is taken into use. Slip preparations of the culture or emulsion are next made. The under slip measures 2 in. × ¾ in., and the cover slip 1½ in. × ¾ in. A drop of the fluid from the standard loop is run between the cover slip and the under slip, and the two slips sealed together by means of melted paraffin wax applied around the edges by a fine camel hair brush.

One tries to so arrange one's standard loop that one drop *just* spreads out between the two slips. This is not so difficult as it may appear. Now this very thin layer between the slips represents the total volume under observation, and its proportion to 1 c.cm. is merely a matter of calculation. This is the second factor. The "slip" preparation thus made is fitted into a special carrier in order that it may be examined under the microscope.

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The next factor is ascertained from the maker of the microscope, and that is the area of the field under observation as seen through an ocular fitted wth a micrometer eye-piece. The area of the upper cover slip is easily estimated, and again a calculation of the ratio of this microscope field to the whole area is simple, and we have the third factor.

The average number of virus spherules per field can now be worked out by counting numerous fields and taking an average :—

Supposing—
A. = Total area of top cover slip.
AF. = Area of field under observation.
S. = Average number of "spherules" per field.
L. = Number of standard loops per c.cm.
LC. = Number of loops required to just flow under the top slip (usually one).

Then the calculation is :—

$$\frac{A.}{AF.} \times S. \times \frac{L.}{LC.} = \text{Number of virus "spherules" per c.cm.}$$

The obvious sources of error in this method at once occur to any laboratory worker, but the method is probably more accurate than some of the present methods employed to estimate the strength of bacterial emulsions. At any rate it was found possible for different workers to obtain similar results with the same virus "spherule" suspension.

This method was constantly used by Miss Chevassut in the preparation of the vaccines for patients suffering from disseminated sclerosis, but after a while we did not estimate exactly the strength of the suspension injected into animals, it being found that 5 c.cm. of a young broth culture produced no ill-effects when injected intravenously.

It was found that treatment of the culture of the virus with a 0·5 per cent. carbol-saline solution killed the virus, and this was the method of sterilising our vaccine suspensions. It was found that as regards animals, untreated cultures of the virus had no apparent immediate effect, whether given subcutaneously or intravenously, and that killed virus suspensions could be given intravenously to patients with safety. The doses used and the clinical results obtained from vaccines prepared in the laboratory are described in Sir James Purves-Stewart's paper (THE LANCET, March 15th).

Some Serological Observations. (J. A. B. H.)

It was quickly realised that fresh human serum was the ideal medium for the enrichment of the Hartley's broth used in the cultivation of the virus, and to the numerous self-sacrificing students and other worke who were bled pretty freely for the benefit of t. research, we owe a debt of gratitude, for it was essential to have a good supply of human serum to obtain good results. Horse, goat, and to a slight extent rabbit's serum, though not actually inhibitory gave slower development and less luxuriant growth of the virus.

It had been ascertained (Miss Chevassut) that the serum of certain patients suffering from disseminated sclerosis subsequent to vaccine treatment proved inhibitory to the growth of the virus in culture, and for that reason some hopes were entertained of producing antibodies in animals. Thus while observations were proceeding on the effects of injections of the killed virus suspension (vaccine) into patients suffering from disseminated sclerosis attempts were made by one of us (J. A. B. H.) to ascertain if an antiserum could be prepared, and further, to see if any sort of antibody could be demonstrated by such procedure as the fixation of complement.

The rabbit was chosen for the initial experiments, and 5 c.cm. of the culture in Hartley's broth and human serum was given each time, while the control rabbit received only Hartley's broth and human serum. Some of the rabbits showed signs of collapse lasting 1–3 hours, but on the whole they were but little affected and maintained a good weight and coat throughout. They were bled at certain intervals under sterile conditions, and their serum tested against cultures of the virus.

Rabbit A received the culture every two days for five weeks, and the serum was then found to have become inhibitory to cultures of the virus. This rabbit was kept alive in order to see how long any inhibitory property lasted. Unfortunately, after it had been kept three months it developed a palsy, which at a subsequent post-mortem was found to be due to a spinal tumour, which it is hoped to describe in a subsequent paper.

Rabbit B received an injection of the culture every four days for five weeks, and the serum in this case was found to be inhibitory when tested at five weeks and again six months later.

Rabbit D received an injection every seven days for nine weeks, and was found to have become inhibitory and to remain so six months later.

Rabbit E also received an injection every seven days, and was found to be practically inhibitory after one week, and completely so in two weeks. Injections were continued in this rabbit, but it unfortunately died from acute pulmonary congestion.

Rabbit C received only Hartley's broth and serum every two days for five weeks, and no inhibitory substance developed in the serum of this control rabbit.

It thus appeared from our observations that it was possible to detect inhibitory substances in certain patients who were suffering from disseminated sclerosis, and to be able to produce inhibitory substances in rabbits in about 2–5 weeks by the injection of cultures of the virus, or in patients by the injection of vaccines.

Some of the monkeys used in the experiments to be shortly described were also bled after they had received intravenous injections, but their serum proved to be possessed of no inhibitory properties.

Some preliminary experiments were next made by one of us (J. A. B. H.) on the sera of Rabbits B and D to see if any fixation of complement occurred, but the results were negative. Later the sera of 12 patients suffering from disseminated sclerosis were similarly tested and again the results were negative.

The method used for the test was Method 4 of the Medical Research Committee's Report No. 14, with minor modifications.

Two antigens were used in these experiments, one being made up of five different cultures of the spherule, and the other from three different cultures. The antigens (broth cultures) could be used in 1/2 dilutions, and the tests were "incubated" by various ways. Being unaware as to whether the hypothetical antibody was thermo-stabile or not, the complement in the human serum was got rid of by keeping the serum for a week. The sera were divided into two halves, one series being incubated at room temperature for half an hour, followed by half an hour in the water-bath at 37° C. The other series were placed in the ice-box for [illegible] hours. Six sera were incubated in the ice-box for [illegible] hours.

All the results were negative.

Experiments on Monkeys. (By Sir J. P.-S. and J. A. B. H.)

It seemed desirable to endeavour to produce the lesions of disseminated sclerosis in animals, and monkeys were selected as most suitable for these experiments. It was determined to give cisternal and intravenous injections of broth cultures of the virus. Sir James Purves-Stewart was responsible for the intracisternal injections, while the remainder of the work was undertaken by J. A. B. H. and the laboratory staff as a whole.

It was decided to give some of the monkeys only intravenous injections, some only intracisternal and some injections of broth cultures of the virus by both routes. The intervals were chosen so that some monkeys received a single injection, while others had repeated injections of broth cultures of the virus. The injections had necessarily to be given under an anæsthetic, and the anæsthetic that disturbed the monkeys least was found to be an A.C.E. mixture. One or two of our monkeys had an anæsthetic at weekly intervals without apparently suffering any ill-effects. In only two instances did we have any anxiety after the termination of the operation for intracisternal puncture, and in most instances the monkeys were munching an apple within half an hour of the puncture being completed. The anæsthetic was given in a chamber slightly

modified from the pattern employed by Prof. Voronoff in his rejuvenation experiments.[1] This permits the animal to be anæsthetised very quietly, under full observation. Indeed, they merely salivate and then topple over sleepily, when anæsthesia can be continued on a warmed table. We kept our animals wrapped up in blankets while recovering from the anæsthetic, and always in front of a fire. The monkeys never experienced the slightest respiratory trouble, though we were working through the very cold weather of early 1929.

We lost one monkey during the operation of cisternal puncture, and one monkey (Monkey 7) from acute gastro-enteritis after it had remained healthy under experiment for many months. With the exception of Monkey 4 (to be described later) all the rest remained lively and in good health and coat, especially one fed on daily rations of whisky (Monkey 2). We gave this monkey whisky in an attempt to damage the antitoxic functions of the liver, since it had been found (Miss K. Chevassut) that this function was defective in patients suffering from disseminated sclerosis. However, when this animal was investigated, the liver was found histologically unaltered.

The spinal cords were examined by various methods, most of the cords being treated by Marchi and Weigert-Pal methods and embedded in celloidin. Some were also embedded in paraffin and stained by hæmatoxylin and eosin, and some also frozen and treated by Scharlach R. My senior technical assistant (Mr. F. R. Chopping) obtained some promising results from frozen sections and a modification of Marchi's method.

Below is shown a brief account of our experiments and the histological findings.

Monkey 1.—A single intravenous injection of 5 c.cm. cerebro-spinal fluid from a case of disseminated sclerosis. The cisternal fluid of the monkey was examined one month and six months later. Cultures found negative on both occasions. Eighteen months after the original injection, 5 c.cm. of a broth culture of the virus was given intravenously. Monkey killed six months after this intravenous injection. Cultures from cisternal fluid negative. Sections of the cord showed nothing abnormal.

Monkey 2.—An intracisternal injection of cerebro-spinal fluid (2 c.cm.) only. The cisternal fluid was examined one month and six months later, and cultures were found negative on both occasions. The monkey was now put on a daily ration of whisky (℥ iis. to ℥ iv.) by mouth. Combined injections by intracisternal (2 c.cm.) and intravenous (5 c.cm.) routes were given at monthly intervals on six separate occasions. After the second of these injections the cisternal fluid was examined, and cultures from it were found to be positive for the virus and remained so at every subsequent examination. Five months after the last injection the animal was killed. The cultures from the cisternal fluid were still positive for the virus. Sections of the cord showed nothing abnormal.

[1] Étude sur la Vieillesse et le Rajeunissement par la Greffe, Paris, 1926. (See Figs. 18 and 19.)

FIG. 1.

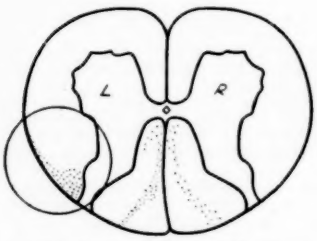

FIG. 1 (Monkey 4).—Degeneration in cervical region (Marchi method). The part outlined in a circle is seen in Fig 2.

FIG. 3.

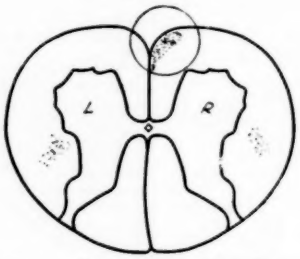

FIG. 3 (Monkey 5).—Degeneration in lumbar cord. The part outlined in a circle is seen in Fig. 4.

FIG. 5.

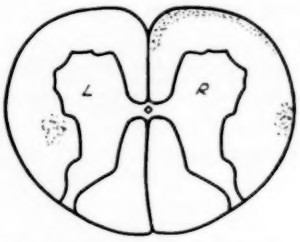

FIG. 5 (Monkey 5).—Degeneration in dorsal cord.

FIG. 2.

Monkey 4.—Photomicrograph of portion within circle in Fig. 1. (× 60.)

FIG. 4.

Monkey 5.—Photomicrograph of portion within circle in Fig. 3. (× 60.)

Monkey 3.—A single intravenous and intracisternal injection from a culture from the fluid of disseminated sclerosis was given. The cisternal fluid was examined one month and six months after and found positive for the virus on both occasions. Twelve months after the first injection the animal received a second intracisternal injection of culture, and was killed seven months later. Cultures from the cisternal fluid were negative on this occasion, though on two previous occasions they had proved positive. Bearing in mind experimental errors there also occurred to us the possibility of acquiring immunity. Sections of the cord showed nothing abnormal.

Monkey 4.—This was our most interesting animal. This monkey received a single intravenous injection of 5 c.cm. of a culture of the virus. Cultures from the cisternal fluid made at one, two, and six months intervals from this injection proved positive for the virus. About nine months after the intravenous injection a transient paresis was observed in the hind limbs. This passed off in about three weeks. The animal subsequently developed several similar attacks, each rather worse than the former until 14 months after the injection the condition became serious. The paresis had spread to the fore limbs, and was more marked on the left side than the right. The tail also was weakened, and towards the final stages the monkey could not climb on to the perch, and lay on the bottom of the cage. It took its food well, and the coat remained in good condition till it was killed to prevent further suffering. A suitable sample of cerebro-spinal fluid could not be obtained at this stage. Sections of the spinal cord stained by Marchi's method show two distinct tracts of systemic degeneration (ascending). One is situated in the left postero-median column at its junction with the postero-external, and the other is seen in the direct cerebellar tract on the left side (see Figs. 1 and 2). In some of the sections stained by hæmatoxylin and eosin there seemed to be evidence of perivascular "cuffing," but the blood-vessels themselves were unaffected. These changes were slight, but seemed to us of importance because abnormal and occurring in this monkey.

Monkey 5.—This also proved an interesting animal, since it was apparently healthy, only sections of the cord suggesting early pathological changes. This monkey received combined intracisternal and intravenous injections of broth cultures of the virus, at monthly intervals for seven months. The cisternal fluid was examined frequently and found to yield positive cultures. It was killed three months after the last injection. Sections of the spinal cord in the cervical, thoracic, and lumbar regions (Marchi method) showed well-marked and fairly compact degeneration at the periphery of the antero-medium column, together with a few scattered patches in both lateral columns (Figs. 3, 4, and 5).

Monkey 6.—Received combined intravenous and intracisternal injections of cultures of the virus and the cerebro-spinal fluid in a case of disseminated sclerosis. The cerebro-spinal fluid was examined two months and seven months later, and cultures were found positive for the virus. The animal was killed seven months after the injection. Cultures made from the cerebro-spinal fluid proved positive, but the liver and spleen were negative for the virus. Sections of the cord showed nothing of note.

Monkey 7.—This experiment was an attempt at transmission from monkey to monkey. The animal received a combined intracisternal and intravenous injections of a culture obtained from the cerebro-spinal fluid of the case Monkey 4. The spinal fluid was examined two months and four months later, and cultures proved negative. Further combined intracisternal and intravenous injections were commenced, but the animal died from an acute enteritis. The viscera were much decomposed as death occurred over the week-end and the cord proved valueless for histological examination.

The only results in any way positive as regards histological changes in the spinal cord were those found in Monkeys 4 and 5. Monkey 4 had definite clinical symptoms, but Monkey 5 had nothing apparently the matter with it when killed. The cords were removed carefully, so that precautions were taken to avoid the changes due to artefacts.

As regards Monkey 4, the question of cage paralysis must be carefully considered, in spite of the fact that all our animals were quite lively and apparently in good health and coat. The degenerations appear to be definitely systemic in character, but there does not appear to be any reference available as to the changes found in the cord in cage palsy, so that one is unable to make any comparison.

One of us (J. A. B. H.) is convinced that the best way to pursue further investigations will probably be by the injections of cultures intravenously, and by single or perhaps two large injections, rather than by repeated injections of small doses. Some of the effects of "vaccines" on human cases do suggest some possible immunity though animal experiments as far as the sera of monkeys were concerned were negative.

Summary.

1. A method has been devised for estimating the strength of the suspension of the virus isolated from disseminated sclerosis.

2. This virus is readily killed with carbol-saline, and suspensions of it can be used as experimental vaccines, and administered intravenously without harm.

3. There is some evidence that after the administration of a virus suspension to patients and to rabbits, inhibitory substances are formed in their sera. There is no similar evidence in the case of monkeys.

4. No complement-fixation phenomena can be observed in patients who have disseminated sclerosis or who have had vaccines administered. The sera of virus injected rabbits also show no complement fixation.

5. No immediate harm results from the injection of large doses of the unkilled virus, but in two monkeys certain systemic tract degenerations have been detected in the cord some ten months later. It is not claimed that these lesions are disseminated sclerosis but their presence is suggestive.

6. It seems highly probable that the best experimental results will be obtained by the intravenous route.

BIOCHEMICAL OBSERVATIONS UPON MYELIN DEGENERATION.

By F. D. M. Hocking.

As one of the characteristic lesions in disseminated sclerosis consists in a degeneration of the medullary sheath with a splitting off of unsaturated acids of the oleic acid series staining black with osmic acid, it was thought desirable to inquire whether the virus described by Miss Chevassut was capable of splitting the lipoids of nervous tissue in vitro. To this end it was decided to attempt to prepare a physically stable emulsion of brain lipoids in human serum and Hartley's broth, and to incubate this fatty medium together with a culture of the virus. It was anticipated that any action which might occur would probably be of the nature of a splitting off either of free fatty acids, or of phosphoric acid, evidence of which would be obtained by a change in the hydrogen-ion concentration of the mixture, corresponding to the amount of acid liberated.

The hydrogen electrode used was of the Rideal pattern, in conjunction with a calomel electrode of ordinary type, a potentiometer and a galvanometer. The instrument was found to be accurate and sensitive to a reading of 2 millivolts.

The lipoid material required for these observations was extracted from a fresh brain obtained post mortem from a case in which there was no possible suspicion of any central nervous disease. The whole brain was finely minced and dried by intimately mixing with three times its weight of plaster-of-Paris. The result was to produce a hard, stony mass which, after being ground to a fine powder was extracted successively with absolute alcohol, ether, acetone, and chloroform, four litres of each solvent being used. These solvents were subsequently removed from the dissolved fat by distillation under reduced pressure in a stream of dry carbon dioxide. The temperature of the heating bath was never allowed to exceed 40° C. All the extracts thus obtained were mixed together, the total yield being 64 g. of a pale yellow (almost white) coarsely crystalline, dry fat. A 2 per cent. solution of this fat was then prepared in a mixture of acetone and ether, so adjusted that no constituent of the fatty mixture remained undissolved. It was found that the whole of the lipoid material could then be brought satisfactorily into solution. When added to Hartley's broth, the fat from this solution separates out into a fine suspension which remains stable for three weeks or longer, and which, moreover, does not tend to separate even on boiling.

TABLE I.—*pH of Cultures of Cerebro-spinal Fluid, Hartley's Broth, and Serum.*

Day	1	2	3	4	5	8	9	10	11	12	13	14
Tabes	7·7	7·7	7·65	7·7	7·68	7·7	7·71	7·68	7·7	7·7	7·68	7·7
G.P.I.	7·6	7·6	7·55	7·6	7·6	7·55	7·6	7·67	7·6	—	7·6	—
Tabes	7·5	7·5	7·52	7·6	7·55	7·45	7·5	—	—	—	—	—
Hysteria	7·5	7·5	7·51	7·52	7·48	Contaminated.						
Normal C.S.F.	7·6	7·6	7·61	7·6	7·55	7·6	7·62	7·58	7·6	7·6	—	—
Broth and serum only	7·6	7·55	7·6	7·6	7·62	7·6	7·6	7·6	—	—	—	—

TABLE II.—*pH of Cultures of Cerebro-spinal Fluid, Hartley's Broth, Fat, and Blood Serum.*

The cases were the same as those recorded above.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Tabes	7·68	7·7	7·7	—	—	7·65	—	7·65	—	7·7	—	Contaminated.		
G.P.I.	7·7	—	7·7	—	7·64	—	7·7	—	7·75	—	7·7	—	7·7	—
Tabes	7·6	7·65	—	7·6	—	7·6	—	7·6	—	—	—	7·7	—	—
Hysteria	7·7	7·7	7·65	—	7·72	—	7·7	—	7·7	—	—	7·68	—	—
Normal C.S.F.	7·6	—	—	7·65	—	—	7·6	—	—	7·6	—	—	7·6	—
Broth, fat, and serum only	7·6	7·6	7·55	7·58	7·6	7·6	7·58	7·6	7·6	7·61	7·58	—	—	—

TABLE III.—*pH of Cultures of the Virus in Hartley's Broth and Blood Serum.*

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Case 1	7·6	7·6	7·5	7·4	7·05	6·88	6·85	6·99	7·1	7·22	7·4	7·5	7·5	—
,, 2	7·6	7·3	6·85	—	6·79	6·9	7·1	7·25	7·5	7·8	8·0	8·0	—	—
,, 3	7·5	7·45	7·1	6·9	7·01	7·25	7·6	7·7	7·8	—	8·0	8·2	8·2	—
,, 4	7·6	7·6	7·5	7·3	7·1	7·0	7·2	7·6	7·85	7·85	8·0	8·1	8·1	—
,, 5	7·6	7·6	7·5	7·4	7·2	7·0	7·0	7·1	7·4	7·6	7·7	7·8	7·8	7·8
,, 6	7·6	7·5	7·3	7·1	6·95	7·15	7·2	7·35	7·5	7·7	7·9	8·0	8·1	8·2
,, 7	7·6	7·6	7·35	7·1	6·88	6·85	7·1	7·2	7·4	7·5	7·5	7·5	—	—
,, 8	7·6	7·55	7·4	7·2	7·05	7·2	7·4	7·4	7·5	7·7	7·9	8·1	8·2	8·2

TABLE IV.—*Amino-acid Content (mg. per 100 c.cm.), pH, and Free Ammonia Content (mg. per 100 c.cm.) of Cultures of the Virus in Hartley's Broth and Serum.*

—	Day	1	2	3	4	5	6	7	8	9	10	11
1	pH	7·6	7·6	7·5	7·3	7·1	6·95	—	7·3	7·5	7·5	7·6
	Amino-acids	14·0	14·7	16·3	17·7	18·7	19·1	—	19·9	20·2	20·3	20·2
	Ammonia	21	30	27·1	23·8	22·5	23·5	—	27·6	30	31	31
2	pH	7·6	7·5	7·45	7·2	7·05	7·3	—	7·5	7·6	7·6	7·6
	Amino-acids	13·4	14·0	14·7	15·5	16·1	16·6	—	17·7	18·5	19·1	19·8
	Ammonia	30	21	20·2	25·5	30·1	30·7	—	32·5	36·0	37·1	36·0
3	pH	7·6	7·6	7·5	7·3	6·95	7·1	—	7·2	7·3	7·3	—
	Amino-acids	13·6	14·1	14·8	15·4	15·9	16·5	—	17·3	18·4	19·2	—
	Ammonia	28	26	22	24	21	30	—	33	36	32	—
4	pH	7·6	7·55	7·3	7·1	7·05	7·2	—	7·5	7·65	7·7	7·7
	Amino-acids	14·1	14·7	15·2	15·9	16·2	16·6	16·9	17·4	17·8	18·3	19·1
	Ammonia	22	24	21	19·6	23	27	—	31	38·1	42·5	46·3
	pH	7·6	7·6	7·6	7·4	7·3	7·3	7·2	Culture dead			
	Amino-acids	14·5	15·1	15·3	15·6	15·7	15·5	15·6	,,	,,		
	Ammonia	27	21	23	24	28	28	27	,,	,,		

TABLE V.—*pH Value of the Fat Emulsion after Inoculation with the Virus.*

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Culture No. 1	7·25	7·11	7·18	—	7·6	7·65	7·70	7·83	7·88	7·91	—	7·92	7·92	7·89
,, ,, 2	7·31	7·28	7·31	—	7·62	7·71	7·82	7·83	7·86	7·89	—	7·92	7·93	7·90
,, ,, 3	7·31	7·25	7·30	—	7·7	7·81	7·85	7·83	7·87	7·91	—	7·93	7·93	7·93
,, ,, 4	7·38	7·30	7·40	—	7·65	7·73	7·82	7·83	7·88	7·91	—	7·91	7·91	7·91
,, ,, 5	7·38	7·35	7·36	—	7·48	7·53	7·55	7·70	7·85	7·93	—	7·99	8·03	8·03
,, ,, 6	7·35	7·27	7·35	—	7·55	7·59	7·62	7·68	7·79	7·82	—	7·88	7·88	7·90
,, ,, 7	7·31	7·20	7·21	—	7·75	7·77	7·80	7·83	7·88	7·91	—	7·98	8·02	8·02
,, ,, 8	7·35	7·15	7·35	—	7·55	7·61	7·67	7·78	7·84	7·88	—	7·94	7·94	7·90
,, ,, 9	7·31	7·28	—	7·41	7·60	—	7·70	—	7·90	—	7·97	8·05	—	8·03
,, ,, 10	7·34	7·30	—	7·48	7·68	—	7·78	—	7·95	—	7·99	8·07	—	8·07
,, ,, 11	7·38	7·30	—	7·49	7·65	—	7·78	—	7·93	—	8·01	8·07	—	8·07
,, ,, 12	7·40	7·29	—	7·51	7·71	—	7·82	—	7·97	—	8·04	8·11	—	8·09
Control	7·3	7·31	7·31	—	7·35	7·37	7·37	7·39	7·38	7·40	7·40	7·39	7·41	7·41

TABLE VI.—*pH Values of the Fat Emulsion after Inoculation with Cultures Previously Grown in a Similar Medium.*

Day	1	2	3	4	5	6	8	9	10	11	12	13	14	15
Culture No. 1	7·31	7·28	7·31	7·45	7·60	7·71	7·83	7·84	7·83	7·85	7·83	—	—	7·83
,, ,, 2	7·34	7·34	7·35	7·37	7·36	7·35	Culture dead							
,, ,, 3	7·36	7·35	7·38	7·41	7·62	7·62	7·60	7·60	7·63	Culture dead				
,, ,, 4	7·38	7·30	7·40	7·55	7·65	7·72	7·81	7·87	7·91	7·95	8·01	—	—	8·01
,, ,, 5	7·35	7·25	7·37	7·44	—	7·55	7·67	—	7·81	7·83	7·82	—	—	7·81
,, ,, 6	7·38	7·35	7·41	7·48	7·60	7·73	7·92	7·97	8·01	8·03	8·01	—	—	8·01
,, ,, 7	7·34	—	7·38	7·45	7·59	7·63	7·82	7·83	7·82	7·82	Culture dead			
,, ,, 8	7·35	—	7·41	7·48	7·62	7·73	7·85	7·92	7·97	8·01	8·03	—	—	8·02
Control	7·3	7·31	7·30	7·31	7·32	7·35	7·37	7·35	7·36	7·35	7·37	—	—	7·41

The preparation which yielded the optimum concentration of fat for this work proved to be an emulsion prepared by the addition of 10 c.cm. of the fat solution to 90 c.cm. of Hartley's broth, an adequate amount of human blood serum—approximately one-third of the total volume—being subsequently added after the fat solvents had been removed. The ether and acetone were removed by heating the mixture to 50° C. for 30 minutes with constant and fairly violent shaking of the fluid. This method was found to be efficient, no stream of neutral gas being required.

It was necessary first of all to find out whether or not the organism would grow in this fatty medium. Cultures were therefore made and examined daily, when it was seen that the spherules grew and multiplied in a normal manner. In the microscopical field it was easy to pick out the spherules from the highly refractile fat droplets although many of these were less than 0·2 μ in diameter.

Before proceeding to the experiment proper it was necessary for comparative purposes to perform a number of control tests with cerebro-spinal fluid and cultures from other diseases. In the first series of experiments, cerebro-spinal fluids from a number of cases of organic nervous disease other than disseminated sclerosis were incubated with Hartley's broth both alone and after the addition of the brain fat. The hydrogen-ion concentration was determined daily, and in all cases was found to remain constant within the limits of experimental error. The actual results obtained in a number of the cases is shown in Tables I. and II.

A second series of cultures was then prepared, consisting of a broth culture of the virus of disseminated sclerosis, in Hartley's broth, and blood serum only. The results showed a progressive increase in acidity during the first four to six days, followed by a gradual return to the original level; in a few cases a more alkaline reaction was ultimately attained. These results are shown in Table III.

These results at first were somewhat disconcerting as they showed a change in reaction which it was anticipated would occur only after the addition of fat. It therefore became necessary to investigate the cause of this acid formation and its subsequent neutralisation. Three sources of acid formation are possible, viz:—

1. From carbohydrates present in the broth, serum, or cerebro-spinal fluid;
2. From the neutral fats present in the blood serum added to the cultures; and
3. From the breaking down of proteins and polypeptides into simpler compounds or substances, particularly the amino-acids.

The amount of sugar present in Hartley's broth, even after the addition of serum and cerebro-spinal fluid, was found in a series of cases never to exceed 0·01 per cent., and in most cases was either far below this level or present in such minute amounts as to be impossible of detection by such tests as the formation of osazones and copper reduction. In reality a little consideration will show that any sugar originally present in the meat from which the broth has been prepared is completely destroyed during the fermentative process of manufacture. It has further been shown that sugar disappears spontaneously from normal blood serum on keeping, owing to the presence of a glycolytic enzyme. Incidentally, Miss Chevassut has previously shown[2] that a similar enzyme is also present in cerebro-spinal fluid. The serum used in all these experiments was kept for a sufficient time before use to eliminate the possibility of any sugar entering the cultures, so that carbohydrates as a source of acid formation are improbable. With regard to the suggestion made by A. I. Kendall[3] that sugars may be split off from glucoproteins, these substances are in the first place almost completely hydrolysed during the preparation of the broth, the sugar being subsequently destroyed, and they exist in only very small amounts in blood serum. As a final test, however, inoculation of a mixture of Hartley's broth and serum with cultures of *Bacillus coli* failed to produce any gas in 14 days. Finally, any acidity due to accumulation of free CO_2 has been purposely eliminated by employing a stream of pure hydrogen in the electrode.

The possibility that the increase in acidity is due to hydrolysis of neutral fats present in the broth or serum was eliminated by a direct determination of the total ethereal extract and its acid value, both before and after incubation for ten days with a broth culture of the spherule. The total ethereal extract was found to average 0·082 per cent., with a negligible acid value, so small indeed as to be incapable of accurate determination. The same was found to be the case after incubation, so that free fatty acid formation as a cause of the acidity is also highly improbable.

There remains the possibility that the observed increase in acidity may be due to a process of hydrolysis of protein and polypeptides into amino-acids, and that the subsequent neutralisation may be due to a further disintegration of these bodies whereby ammonia is liberated. That this in fact is the probable explanation of the changes observed may be inferred from the results of a determination of the amino-acid content, the hydrogen-ion concentration, and the ammonia in a number of cases, shown in Table IV.

It will be observed that there is a progressive and approximately uniform increase in the amount of amino-acids present, sufficient indeed to account for the change in reaction in the medium. We are therefore justified in assuming that the observed increase in acidity is the result of a breakdown of protein by the virus.

It is more difficult to explain the erratic results obtained for the ammonia content, particularly the decrease which occurs during the first part of the experiment, which will, of course, account for some of the acid production. That this decrease is not due to actual loss of ammonia is shown by the fact that a series of determinations of free amino ($-NH_2$) groups in the culture medium yielded practically identical

TABLE VII.

—	Day	1	2	3	4	5	8	9	10	11
1	pH	7·4	—	7·41	7·49	7·61	7·78	7·81	7·90	7·95
	Amino-acids	14·0	14·3	14·7	15·3	16·1	17·1	17·7	18·1	18·5
	Ammonia	20	23	24	22	22	25	28	29	31
2	pH	7·38	7·30	7·40	7·55	7·65	7·81	7·87	7·91	7·95
	Amino-acids	14·0	14·4	14·8	15·6	16·5	18·2	19·2	20·0	20·6
	Ammonia	18	15	15	17	14	20	21	22	22
3	pH	7·31	7·28	7·31	7·49	7·62	7·83	7·87	7·91	7·93
	Amino-acids	14·2	14·6	14·9	15·3	16·2	17·4	17·8	18·3	19·1
	Ammonia	20	22	17	14	13	21	23	29	33
4	pH	7·41	7·29	—	7·51	7·71	7·97	8·04	8·11	8·09
	Amino-acids	14·1	14·4	14·8	15·3	16·3	17·8	18·2	18·9	19·4
	Ammonia	24	19	22	25	27·3	29	31	35	38

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[2] Quart. Jour. Med., 1927, xxi., 91.
[3] Jour. Biol. Chem., 1912, xii., 215.

results both before and during the course of incubation. We must therefore tentatively infer that some process of recombination of ammonia with hydroxy-acids occurs. This may possibly be associated with some special stage in the life-history of the organism.

Having established that the virus will grow in this fatty suspension, and having obtained for comparative purposes characteristic curves of the normal changes produced as a result of its propagation, daily pH determinations were carried out on a series of cultures inoculated into the fatty emulsion. It was anticipated that there would be a gradual and progressive increase in acidity in addition to that produced as a result of protein breakdown. The actual results obtained, which are precisely opposed to those expected, are shown in Table V.

It will thus be observed that after a short period (24–48 hours), during which there is a slight tendency to increase acid formation, there is a progressive *diminution* in acidity towards an approximately constant value. In order to determine whether or not, at the level thus obtained, the virus had actually been killed off or was only inhibited in its further development, the cultures used in the above experiment were reinoculated into the fat emulsion, the daily pH values being determined as before, with the results shown in Table VI.

Many of the cultures, therefore, retained their vitality after growing for 14 days in the fat, and were still capable of reproducing the same results obtained as when first inoculated into fat.

Estimations of amino-acid production in the fatty medium, to compare with those in which no fat was used, were then undertaken for comparative purposes, and the results are shown in Table VII.

In spite of an increase in the amount of amino-acids present, there is a progressive diminution in hydrogen-ion concentration of the cultures. This cannot be accounted for by an increase in the ammonia content which is approximately the same as before. The only other likely possibility is that it is not the free fatty acids which are primarily split off from the fatty molecule, but the nitrogenous base choline. If this is so, it amply corroborates the observations of Halliburton and others that choline can be demonstrated in the cerebro-spinal fluid in lesions associated with nervous disintegration. An attempt to isolate from cultures the free base in the form of its platino-chloride has, so far, given inconclusive results, possibly because it is still bound to a larger molecule by linkages which do not involve either its amine or hydroxyl groups.

A determination of the acid value of the ethereal extract from the fatty medium, both before and after incubation with the virus, gave results which do not suggest that any splitting off of free fatty acids occurs as a result of metabolic activities on the part of the virus.

The conclusion which may legitimately be drawn from these investigations appears to be that cerebro-spinal fluids containing this particular virus exert a specific hydrolytic action not only upon proteins and their disintegration products, but also upon the fatty constituents which occur in nervous tissues. A substance is split off from the latter in vitro, which can be detected in these fluids when organic degenerations of the nervous system are present.

In conclusion, we wish to thank the various members of our technical staff for their invaluable assistance, and we mention by name Mr. F. R. Chopping, our senior technical assistant, and Messrs. W. Lewington, F. Wilson, and A. Morris.

HOSPITAL ALMONERS.—The annual report of the Institute of Hospital Almoners records a considerable increase in the number of trained almoners in the service of hospitals. The number of students in training also shows an increase.

SMALL-POX AND VACCINATION IN THE LIGHT OF MODERN KNOWLEDGE.*

BY JAMES McINTOSH, M.D. ABERD.

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THE most important features of small-pox which have been noted in recent years are the changes in age incidence and in virulence of the disease and the problems which have arisen in relation to vaccination.

Change in Virulence and Age Incidence.

According to Creighton (1894) in his great classic, "The History of Epidemics in Great Britain," the earliest authenticated references in Europe to small-pox appear only in the sixteenth century. The disease was well known before this to the Arab physicians; for Rhazes's treatise, the first book on small-pox, appeared in the tenth century. But it was not till the reign of James I. that small-pox began to be recognised as a killing disease in Britain. Before this it had undoubtedly been mixed up with measles, and in Elizabethan times the word "variola" was mostly applied to measles. Up to this time small-pox had been regarded as a mild disease. Thus Whitaker wrote in the middle of the seventeenth century that small-pox was "petit" and puerile and the cure "of no moment." Willis expresses much the same view, as also does Parrott, in his "Acute Diseases of Children." Undoubtedly great attention was drawn to small-pox on the death of Queen Anne from it in 1694, and it seems to have been particularly fatal to the Stuarts, since a sister and brother of Charles II. died from it in 1660.

Small-pox, therefore, came gradually into prominence and made no dramatic outburst like plague and syphilis. In the Stuart period, and for a long time afterwards, it produced its chief fatality among infants and children and, as it were, only incidentally affected adults. In the severe epidemic of 1783–1800 which occurred in Glasgow and which may be said to mark the highest degree of virulence, something like 90 per cent. of the deaths were in children under 5 years of age. The highest mortality at this period was over 30 per cent. Figures up to 50 per cent. however, have been recorded in certain outbreaks.

The increase in the virulence of small-pox was quite evident early in the eighteenth century and, as a result of this, the public as well as medical science were roused to combat the ravages of the infection. Thus when the protective properties of small-pox inoculation were brought to the notice of London society in 1721 people were quite ready for its adoption. To the various steps in the evolution first of inoculation and then of vaccination I shall return later.

As time went on, and specially towards the end of the nineteenth century, a change began to be noted both in the age incidence and in the virulence of the disease. The great epidemic of small-pox of 1837–40 still chiefly affected infants as formerly, but from the epidemic of 1871–72 and onwards the chief brunt of infection has been borne by young persons and adults, rather than infants and children. The virulence of the disease as judged by the case mortality showed a definite decline by the beginning of the twentieth century.

Two Types of Small-pox.

Rajchman (1928), in his authoritative paper on the Control of Small-pox, definitely states that: "The manifestations of small-pox in recent years have been characterised by (1) a very well-marked decrease in the incidence, and (2) an almost universal decrease of the case mortality." The figures, however, have

* Abstract of an Address delivered before the Stourbridge and District Medical Society on Feb. 4th.

been somewhat complicated by the appearance of a very mild type of small-pox known as alastrim. This mild form is believed to have appeared in this country about 1919, and since that time the number of small-pox cases (alastrim) has increased to over 2000 per annum. The general mortality from small-pox has fallen from 11·4 in 1920 to 0·3 and 0·2 at the present moment. Outbreaks of classical small-pox, with mortalities of 30 per cent. and over, have occurred in localised areas (London, 1922; in the *Tuscania* outbreak, 1929), but always from the importation of a fresh virus from abroad.

Apparently, it seems that there are two distinct types of small-pox and that they can exist side by side. They are, first, the classical or virulent form which is no longer endemic in this country and, secondly, the mild form of alastrim prevalent in South America, West Indies, South Africa, Australia, &c. Thus it may be said that these two forms breed true, for no good evidence has been brought to light to show that the mild form has ever given rise to the severe form of the disease. Yet experimental investigation mostly tends to show a very close relationship between the virus of alastrim and that of small-pox. Histologically, the lesions are identical; there are the same intracellular corpuscles† and bodies‡ in the lesions while the serological tests (flocculation, complement-fixation, &c.) give similar results (Gordon, 1925, Ledingham, 1925). On the other hand, cross immunity experiments are not quite so definite and they suggest that there is a considerable antigenic difference between the viruses of vaccinia and alastrim. Thus cases of alastrim can often be successfully vaccinated after the attack, yet vaccination strongly protects against alastrim. Alastrim is a mild disease affecting, to a large extent, those in the lower ranks of life, especially undernourished. The question at present is whether the mild cases should be reported as alastrim and not as small-pox.

How, then, are we to explain this fluctuation in virulence? May it only be that true small-pox, like many epidemic disorders, shows these periodic changes of virulence, the meaning of which has given epidemiologists much room for thought? Whil t alastrim must be regarded as something apart Or it may be that the early accounts of small-pox, in the sixteenth century, really referred to the presence of alastrim, and that classical or virulent small-pox was introduced for the first time in the Stuart period.

The change in the age distribution of small-pox seems most likely to have been influenced chiefly by vaccination although other causes have been suggested, but it is difficult to determine to what extent other causes have been at work as well.

Vaccination.

There are three features of vaccination which I wish to discuss: (1) The nature or source of origin of the virus. (2) Vaccination as a general disease. (3) Nervous complications.

The Nature or Origin of Vaccine Virus.

The true nature, or rather the source of origin, of vaccine lymph has been a subject for discussion since the very inception of Jennerian vaccination, but I am afraid that the true nature of Jenner's inoculum can never be definitely decided now. Since his time, however, much has come to light which is rather against the fact that vaccinia virus (vaccine lymph) is really a true cow-pox. It was, of course, assumed in the Act of 1840 which prohibited variolation that the Jennerian vaccine was true cow-pox; in other words, it was a contagious disease of cattle and not a disease produced in cattle by the accidental inoculation of small-pox virus. Considerable support was given to the view that cow-pox was a spontaneous disease of cattle by the fact that it was extremely difficult to inoculate cattle with variolous material. We now know that this difficulty is more apparent than real, and arises from the insignificance of the primary lesion, and that small-pox can be transmitted to cattle, horses, and other animals.

Vaccination, as I have already indicated, undoubtedly arose out of a well-merited demand for some measure of protection against the frequency and virulence of small-pox and which had none of the disadvantages of small-pox inoculation. The first attempt at protection against small-pox was the inoculation of small-pox material, or as it is called, variolation. This was introduced into England in 1721, although the procedure had been practised in the East for some considerable time. The disease produced by inoculation was mostly of a very mild character, and this mild disease, of course, protected against small-pox. We all know that the introduction of small-pox inoculation has been accredited to Lady Mary Wortley Montagu, who had one child inoculated in Constantinople by the medical attendant (Maitland) at the British Embassy. After this had proved successful she had a second child inoculated in London. These successful results set the fashion and inoculation against small-pox became quite a rage amongst the wealthier classes, and even the Princess of Wales had two daughters inoculated. Though a few disquieting results checked the advance of inoculation for a time, by the year 1743, according to Creighton (1887), it had become quite a lucrative branch of medical practice. In 1746, institutes were opened in London for the carrying out of small-pox inoculation, as at the Middlesex County Hospital for small-pox in Windmill-street and at Bethnal Green. Many children were inoculated each year with only a few bad results. Such accidents as arose from time to time were the development of a severe form of the disease with occasional fatal results, whilst in one or two instances it was averred that infection had been spread by cases of inoculated small-pox.

The next advance in the process of inoculation was made by Sutton and was known as the Suttonian inoculation. His procedure was kept secret for a time, but its chief merit was that the virus was obtained from cases of inoculated small-pox, not from natural small-pox. In other words, this was an "arm-to-arm" inoculation of inoculated small-pox. It is said that Sutton and his assistant inoculated over 20,000 cases between 1764 and 1766, with practically no untoward results, and that in the year 1765 he made over £6000 profit. He claimed by his method that there was no danger of spreading infection.

It is thus evident that by the end of the eighteenth century inoculation against small-pox had, in general, been accepted as a salutary and safe procedure against the disease. With the idea of obtaining a still milder inoculum against small-pox, other procedures were attempted. These consisted mainly of attempts to make use of such natural diseases of animals as swine-pox, cow-pox, and horse-pox. Thus, in 1774 cow-pox was first inoculated into a human being by Benjamin Jesty, a farmer of Dorset, and in 1789 Jenner inoculated his own child of 8 months with swine-pox material. Both Jenner and Jesty were familiar with the popular belief which had existed in Gloucestershire for a long time, that people who had accidentally become infected with cow-pox were protected against small-pox. But it was not till 1796 that Jenner inoculated a healthy boy of 8 years with cow-pox material from the hand of a dairymaid, and a couple of months later, on inoculation with small-pox material, the boy was found to be immune. This was the only case mentioned in his original communication. Later, he carried out a similar experiment on another child with complete success. These apparently were all the experiments that Jenner did with regard to the actual protection of cow-pox inoculation against small-pox. But his original paper also contains particulars of ten instances where a supposed previous attack of cow-pox in dairy workers protected against exposure to small-pox infection. Crookshank, in his "History and Pathology of Vaccination" (1889), after reviewing Jenner's original paper, states "Such was the evidence

† Corpuscles of Guarnerii.
‡ Paschen Bodies.

on which Jenner had first proposed to introduce vaccination; a proposal which was rejected in not very flattering terms by the Council of the Royal Society." The value of cow-pox inoculation as a protection against small-pox was, therefore, in Jenner's case, little more than a belief, and it was really owing to the researches of Woodville and Pearson that the protective power of cow-pox was firmly established as a scientific fact. There is also good reason for believing that the original strain of lymph vaccine distributed throughout the world was really Woodville's,§ for Jenner himself admitted he had no strain available, and Woodville sent him his (Creighton 1887).

Jenner himself was cognisant of two types of cow-pox which he terms "true" and "spurious." Apparently, in those days outbreaks of true as opposed to spurious cow-pox were not so frequent as to enable a fresh strain to be obtained without any difficulty, and really since then very little has been done to determine the true nature of frequency of outbreaks of spontaneons cow-pox and the extent to which the virus can protect against small-pox. Several instances are on record where the cow-pox virus did not afford protection against vaccination (Dean, &c.), and my own experience, which concerns one outbreak (unpublished), was similar.

I shall not go into the various arguments which were used for and against the practice of Jennerian vaccination. But, as a result of a very active propaganda on the part of Jenner and his supporters (Church and State), and by the opening of cow-pox institutes, vaccination became extensively practised in this country and also in America.

The chief arguments against small-pox inoculation were that it gave rise at times to a severe disease and it was apt to spread infection. But was this process of inoculation, particularly that practised by Sutton and Dimsdale and ultimately prohibited by the Act of 1840 really so very different from what we practise now as Jennerian vaccination, if we exclude the arm-to-arm inoculation? In both of them the inoculation material is variolous in origin. The only real difference is that in modern vaccination the vaccine lymph (admitted to be variolous in the great majority of instances—Report of Committee on Vaccination (1928)) has been modified by passage through the rabbit and the calf.

Vaccination as a General Disease.

The discovery that rabbits are readily susceptible to vaccinia virus has given a practical means of studying the infection from the experimental point of view. The infection can be carried on from animal to animal by skin inoculation, brain or intracerebral inoculation, testicular inoculations, or intravenous inoculation.

The virus inoculated into the skin we now know does not merely multiply locally but invades the whole body, and, in fact, produces a general infection. The virus has been demonstrated in the blood within 24 hours of the inoculation and for as long as 15 days afterwards, while somewhat similar results have been obtained in human vaccination (Ohtwara, 1925).

By rapid passage from animal to animal strains of vaccinia of high virulence for the rabbit can be produced—some of which are active in one in a million dilution, particularly the neuro-vaccine and testicular strains. These strains do not merely generalise, as has been stated, but produce lesions in the internal organs, particularly in the lungs, and often produce fatal results. Usually in these cases a well-marked exacerbation of the symptoms occurs from the tenth to the twelfth day, often with a general skin eruption, thus comparable to what occurs in small-pox and general vaccinia (Ackland, 1912).

§ This strain of cow-pox was raised by Woodville from an outbreak in a dairy in Gray's Inn-lane in 1799; all his experiments are given in detail but, working as he did in close relation to small-pox, it is difficult to see how he could possibly keep his virus uncontaminated with variola. To my mind, the severe eruptions often with large numbers of papules (up to 1000) which he obtained after inoculation suggests his virus was variolous.

When I first demonstrated a strain of vaccinia with the above properties (1928) the work was vigorously attacked and I was told that the visceral lesions depended solely on the stimulation by the vaccinia of latent bacterial infections (pasteurellosis in the rabbits (Ledingham, 1929). But experimental researches showed that the majority of these visceral lesions were bacteria-free (McIntosh and Scarff, 1929). Quite recently these results have been confirmed by a number of workers, and it is now accepted that these visceral lesions are true vaccine lesions—Douglas Smith and Price (1929), Andrewes (1929), Ledingham and Barratt (1929). The importance of the findings will become more evident when I come to deal with post-vaccinal encephalitis.

It has also been found that the serum of rabbits which have recovered from vaccinia contains antibodies, and with this serum immunity reactions (precipitation or flocculation and complement-fixation tests) can be brought about. Recently these tests, particularly the flocculation test, have been applied with considerable success to the early diagnosis of small-pox (Gordon 1925, Burgess, Craigie, and Tulloch 1929). As far as can be determined by these tests there is no antigenic difference between the virus of small-pox and vaccinia, nor between small-pox and alastrim. Thus, these three conditions are closely related.

The Infecting Agent and its Cultivation.

All bacteriologists are now agreed that the virus of vaccinia (as well as that of small-pox and alastrim) belongs to the group of filter-passers, and are outside the range of the ordinary microscope, but their presence can be demonstrated indirectly mainly by their infective properties.

Cultivation of vaccinia virus has been successfully carried out in recent years by the tissue culture method (Parker, Maitland, Eagles and McLean, &c.). This method consists of placing a small portion of living tissue in a small amount of plasma or other suitable fluid, and incubating. The cells grow out from the small central nodule of tissue and if traces of vaccinia virus have been added, multiplication of the virus follows. Dr. L. W. Proger, in my laboratory, has carried on vaccinia virus for many generations without any loss of virulence. It is generally admitted, however, that no successful cultivation of vaccinia virus has taken place in the absence of living, or at least, surviving cells. It is hoped that by this cultivation method a pure strain of vaccinia may ultimately be obtained for vaccination purposes.

Post-vaccinal Encephalitis.

I now come to what is perhaps the most important of all—namely, post-vaccinal encephalitis. The relation of this very fatal form of encephalitis to vaccination was apparently unknown previous to 1922, although a similar case had been observed by Prof. H. M. Turnbull in 1912. Then in 1926 Prof. Turnbull and I published a paper recording our investigations into seven cases of post-vaccinal encephalitis which had occurred in 1922 and 1923, and since then several hundreds of similar cases have been recorded throughout Europe by Lucksch, Bastiaanse and others.

The clinical history of these cases of post-vaccinal encephalitis shows a great similarity, they have chiefly been found in relation to primary vaccinations, and particularly in children of school age. The cerebral symptoms, as a rule, begin 10–12 days after inoculation, up to which time the vaccination has run quite a normal course. There is then developed drowsiness, headache with vomiting, and definite paresis. These symptoms are frequently followed by delirium, coma, and death. Recovery—that is to say, complete recovery—may take place after very definite paralysis has become manifest.

The post-mortem examination shows œdema and congestion of the meninges, softening of the brain and cord, and parenchymatous degeneration of the internal organs. Without going into histological

details it may be said that the central nervous system shows very definite inflammatory lesions consisting of cellular infiltration and destruction of the myelin sheaths (perivascular demyelination). The characteristic features of these are as follows:—

1. Wide distribution of lesions in grey and white matter of the brain and cord.
2. Perivascular nature of the lesion.
3. Slight vessel sheath infiltration, with considerable extra-vascular parenchymatous infiltration, producing a peculiar radiating appearance.
4. Infiltration composed mainly of large endothelial type of cells and glial cells.
5. Perivascular area of softening or demyelination.
6. Occasional presence of small focal lesions in the internal organs.

The above features, we considered, were sufficient to show that we had to deal with a new pathological entity, in that the lesions were distinct from those met with in the known virus infections of the central nervous system, and in particular, in poliomyelitis and encephalitis lethargica.

Incidence.—In this country, from December, 1922, to the end of September, 1929, 100 deaths have been recorded from post-vaccinal encephalitis, so that we can assume that at least from two to three times that number of cases have occurred. In Holland a large number of cases have also been recorded; from 1924 to Jan. 1st, 1927, 139 cases were reported with 41 deaths, the case incidence varying from 1 in 3555 to 1 in 31,531 vaccinations, the latter figure being for children under 2 years of age in whom the encephalitis is much less common. Cases have occurred in much smaller number in the other European countries and in America. (League of Nations, 1928.)

Nature of the encephalitis—There has been much discussion with regard to the nature of post-vaccinal encephalitis. It is now admitted that the relationship of the encephalitis to vaccination is not merely fortuitous, since there is a very definite association between them, both with regard to time and place. The two chief bases for discussion are: (1) That the disease is vaccinal in origin—i.e., due mainly to the action of the vaccine virus (McIntosh, Lucksch, Netter, &c.). (2) That vaccinia virus itself cannot be considered responsible.

The second hypothesis necessitates the intervention of a second virus (Report of Committee on Vaccination, 1928) or microbe (Pondman, 1927, Kling, Lönberg and Da Wassen, 1929) which is either introduced by the vaccination or has been lying dormant in the tissues and is stimulated into activity by the vaccination. In support of the first it can be stated that—

(*a*) There is a very constant relation between the vaccination and the onset of the cerebral symptoms.
(*b*) Generalisation of vaccinia virus follows rapidly on the introduction of the virus (both in man and in animals), reaching a maximal effect about the tenth to twelfth day, when the cerebral symptoms generally begin.
(*c*) Histologically the essential features of the inflammatory reaction are of the same character as those found in vaccinia and in variola and in experimental encephalitis of the rabbit and of the monkey.
(*d*) Vaccinia virus is the only virus so far which has been isolated from the cerebral lesions.

In support of the second view, it is now mainly urged that the lesions found in the brain in post-vaccinal encephalitis are similar to, or even identical with, those found in a number of other conditions affecting the central nervous system, such as are found occurring in relation to small-pox, measles, typhus fever, &c., and also present in acute disseminated encephalomyelitis (Redlich, &c.). The common feature of all these is perivascular areas of demyelination. But I consider this is rather a sign of severe intoxication and is not specific. Further, it is only to be expected that cerebral lesions found in small-pox, measles, typhus fever, &c., should show considerable resemblance, as they are all caused by filter-passing viruses capable of producing an exanthematous disease—i.e., viruses with a similar action.

Treatment—Good results have been claimed by Horder and by Netter, 1929, from the intrathecal injection of antivariolous serum or the serum of individuals who have been recently vaccinated. But so far the number of cases treated has been small.

Prophylaxis—But whatever the exact nature of post-vaccinal encephalitis, the knowledge that vaccination is the immediate cause necessitates some modification of the process by which vaccination is carried out, or of the vaccine lymph itself, in order to reduce the intensity of the infection.

The simplest procedure would be to weaken the power of the virus by heat or other means, as is done in other vaccination processes, but this is impracticable as the immunity produced by killed vaccine lymph is negligible. Further, it has been shown that the immunising power of vaccinia depends, to a great extent, on its virulence. Therefore the only procedures left must be to reduce the amount used, and to make sure that the virulence of the lymph has not been excessively exalted. The reduction of the dose has been advocated by the Vaccination Commission who recommend a single area of insertion instead of four. But this can hardly be hoped to make a great deal of difference to the resultant intensity of the infection as, owing to the strength of modern vaccine lymph, an inoculation of a very large number of infecting doses will still be made, even if only one area of insertion be used; but, in fact, often many hundreds, if not thousands. Further, it is made more complicated by the rapid generalisation of the virus. This explains the difficulty there has been in demonstrating a definite correlation between the number of vaccination scars and the degree of resistance.

What, to my mind, is most necessary is a standardisation of the vaccine lymph in terms of infecting doses, and vaccination might then be carried out by the intradermal inoculation of a definite amount of fluid containing the prescribed number of infecting doses. Thus, the rapidity of the general invasion would be delayed, giving the tissues a chance to produce a certain amount of resistance (antibodies, &c.) before they are overwhelmed by the virus which has rapidly multiplied in the tissues.

There are, of course, considerable difficulties in applying such a method but they are not insurmountable. At the present time, however, it does seem rather a piece of anachronism that vaccine lymph should not be standardised in accordance with modern therapeutic procedure.

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THREE NEW INSTRUMENTS FOR OBTAINING AND WORKING FASCIAL SUTURES.

By T. J. D. LANE, M.D. Dub., D.T.M. & H.,

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AND

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THE instruments to be described were devised at the Meath Hospital and Co. Dublin Infirmary, and have been in use in one form or other for a couple of years. The first instrument is a cutter for obtaining strips of fascia lata subcutaneously through a single small incision. The credit for first thinking of obtaining fascia lata subcutaneously and also for first very successfully putting his idea into execution belongs entirely to our colleague, Mr. Henry Stokes.

FIG. 1.

Meath Hospital fascia cutter.

FIG. 2.

FIG. 3.

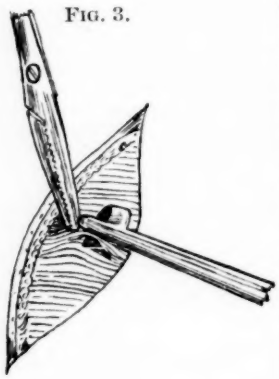


FIG. 4.

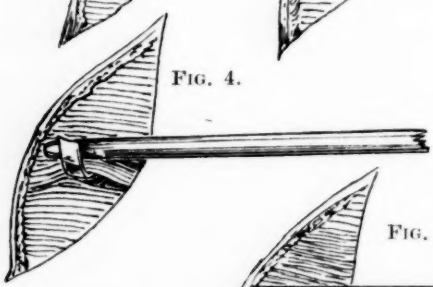
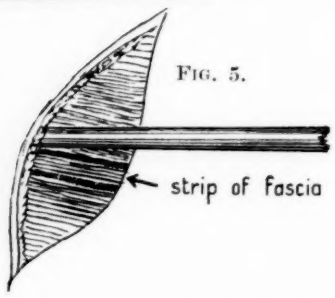


FIG. 5.



FIGS. 2–5.—Method of obtaining strips of fascia with the cutter.

Stokes's instrument consists of a short tube about ¼ in. long by ¼ in. in diameter, mounted on a steel rod 12 in. long, which is provided with a handle at its other end. The tube is fixed parallel to the rod and is provided with a cutting edge at its distal end. To obtain the fascia lata, a short incision is made on the outer side of the thigh about a handsbreadth above the knee. The fascia being exposed two parallel incisions ¼ in. to ½ in. apart are made in it, and a strip of fascia freed up and snipped across at its distal end. This strip is now threaded through the tubular cutter. With the free end of the strip held by an artery forceps, the cutter is pushed subcutaneously straight up the thigh in the line of the fibres of the fascia lata. The cutter is pushed up as far as possible and is then held steady, and a small incision is made down on it. The fascia lata is exposed and the proximal end of the strip is cut free. Other strips as desired may now be cut by pulling down the cutter and starting the process again. The rent in the fascia is, of course, not sutured, and though the method has been in use for a couple of years no ill-effects have followed this omission. This instrument is made by Messrs. Smith and Shepherd, Stephen's Green, Dublin, Ireland.

FIG. 7.

Tubular director.

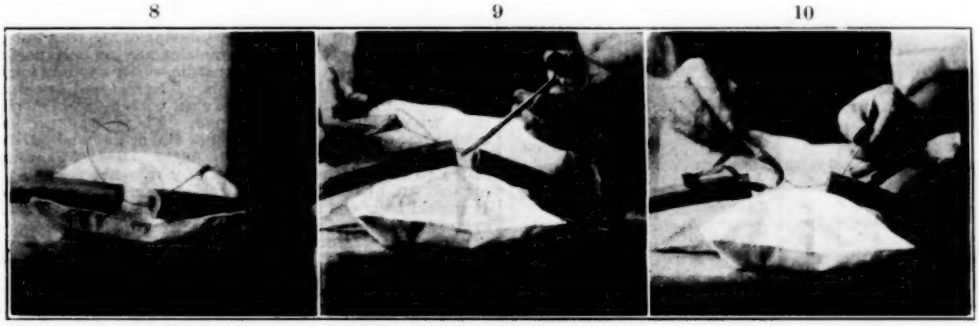
We have modified Stokes's cutter, so that only one skin incision is necessary, and the introduction of the instrument into the fascia has been made almost automatic. Every member of the surgical staff of the Meath Hospital has had a hand in improving this tool, and we desire it to be known as the "Meath Hospital fascia cutter" (Fig. 1). It is, in the main, an open ring or horseshoe-shaped knife with the cutting edge on the distal end, blunt at the proximal end, fixed on the end of a 10½ in. steel stem with a good-sized handle giving a firm grip.

In use an incision 1 in. to 1½ in. in length is made on the outer side of the lower end of the thigh 2½ in. above the knee, and in an oblique direction from above downwards in order to expose the fascial fibres somewhat transversely. The fascia lata now laid bare is dissected free of fat, not merely at the bottom of the wound, but under its upper edge for an inch or more. It is then picked up with an Allis's forceps (Fig. 2) and the sharp free edge of the cutting hook of the knife is pushed through the base of the ridge so formed, making thereby two incisions (Fig. 3), the width of the strip of fascia between these incisions depending on the height of the ridge raised. The distal end of the strip thus made is seized with an artery forceps and *held taut*, while the hooked knife is pushed along subcutaneously in the line of the fibres of the fascia up the thigh as far as it will go (Figs. 3, 4, and 5). A rotatory movement of the instrument on the fascia strip, which is still held taut, will generally sever it from its upper connexion. Occasionally this manœuvre may fail owing to the strip falling out of the hook, in which case the knife should be withdrawn, the strip again threaded through the hook and given one twist around the shank of the instrument (Fig. 6). The knife is now advanced to the top of the strip again, the strip is held taut, and the knife is pushed obliquely upwards

FIG. 6.

Strip of fascia twisted round shank of fascia cutter.

so as to make an angle of about 20° to 30° with the strip. This brings the cutting edge of the knife across the fascial fibres and will always cut free the strip.



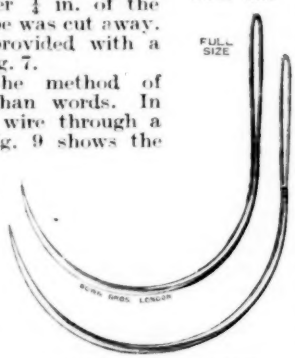
FIGS. 8–10.—Method of using a tubular director in suturing bone.

It is essential to obtain the strips of fascia from the outer side of the thigh, for here the cross fibres are practically absent and the fibres accordingly split far more easily than in front or elsewhere where the cross fibres are well developed. This also applies to Stokes's instrument. In practice we sometimes find it is better to cut several narrow strips of a convenient width for sewing rather than to cut one or two wide ones and have to split them up later. The advantage of this instrument over the former tubular type is that it is self-entering into the fascia, and that the strip can be cut at its far end subcutaneously, only one skin incision thus being necessary.

Suture of Bone and Fascia.

The next instrument is a tubular director for use in suturing bone with fascia or wire. It was made originally by adapting a curved saline needle, the point of which was ground off and then the lower ¼ in. of the concave part of the tube was cut away. In its present form provided with a handle it is shown in Fig. 7.

FIG. 11.



Needles for suturing fascia.

Figs. 8–10 show the method of employing it better than words. In Fig. 8 it is guiding a wire through a hole in the bone. Fig. 9 shows the first step in suturing a fractured bone with a strip of fascia (a bit of tape is actually doing duty for the fascia here). A loop of fine snare wire is guiding a strip of fascia through a hole in one fragment. In Fig. 10 the director is guiding the loop of snare wire through the hole in the other fragment. To facilitate the passage of the snare wire loop through the hole in the bone and in the director the ends of the loop are twisted together. This tool will be found very useful for suturing bones with fascia or wire.

We come, finally, to our fascia suturing needles. Two of these are shown in Fig. 11. We have replaced the eye of the ordinary triangular-edged muscle needle with a small flat loop of wire about 1 in. long. This needle is, of course, only an extension of Arthur's original plan of using a loop of silk. It may be threaded very easily with the aid of a fine-pointed artery forceps. The needle is not unduly heavy or wide, and is quite convenient in use.

The three instruments are obtainable from Messrs. Down Bros., of London. In their preparation we gratefully acknowledge the assistance given by the late Richard Lane Joynt, surgeon to the Meath Hospital, who made beautifully finished and improved instruments from the models we submitted to him.

Clinical and Laboratory Notes.

FŒTOR ORIS OF TONSILLAR ORIGIN AND CERTAIN BACILLI CAUSING IT.

BY ALDO CASTELLANI, HON. K.C.M.G., D.S.C., M.D. FLORENCE, F.R.C.P. LOND.,

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As is well known, fœtor oris (halitosis) may be due to a variety of causes. More often than is perhaps suspected it is due to some chronic pathological condition of the tonsils, such as, for instance, granulomycosis of the crypts. In certain cases of granulomycosis a most offensive odour is emitted when the granules are extracted and squashed. The granules contain many different germs: bacilli, cocci, nocardias, monilias, spirochætes, fusiform bacilli, and sometimes even amœbæ and flagellates. In two of my cases I have isolated and grown from these granules certain bacilli which produce in agar culture exactly the same offensive odour as was noticeable in the patient's breath, and on squashing the white granules. Moreover, I have isolated these organism in four cases of fœtor oris in which the tonsils appeared normal except for some enlargement, and in two cases in which they did not even seem to be enlarged. The individuals, however, had a very offensive breath, and in making swabs from the tonsils and fauces the same two germs were grown (Bacillus I. from three cases, and Bacillus II. from the others). Of course, many other organisms were also present but none of them produced any smell in cultures. The smell is most noticeable in agar cultures kept at 35° C. for 12–24 hours. After three or four days the cultures lose the odour unless the tubes are rubber-capped, when the odour may be noticeable even after five or six days. The odour is not present, or only very slightly, in glucose agar cultures.

Bacillus I. is a motile, Gram-negative bacillus, easily stained by the usual aniline dyes. It does not liquefy gelatin or serum, it clots milk, and produces acid and gas in lactose, glucose, lævulose, maltose, galactose, saccharose, mannitol, sorbitol, raffinose, arabinose, xylose, dextrin, and glycerin. The biochemical reactions are shown in the table.

Bacillus II. is a motile, Gram-negative bacillus, easily stained by the usual aniline dyes. It does not produce gas in any sugar, it does not clot milk, and

does not liquefy gelatin or serum. The biochemical characters are shown in the table.

Biochemical Reactions of Two Bacilli.
(Incubation period, 7 days.)

—	Bacillus— I.	Bacillus— II.	—	Bacillus— I.	Bacillus— II.
Motility	+	+	Sorbitol	AG	0
Gram	0	0	Inositol	0	0
Gelatin	0	0	Rhamnose	AG	0
Serum	0	0	Adonitol	0	0
Litmus milk	AC	0 Alks	Raffinose	AG	0
Lactose	AG	0	Arabinose	AG	0
Glucose	AG	0	Xylose	AG	0
Lævulose	AG	0	Dextrin	AG	0
Maltose	AG	0	Amygdalin	0	0
Galactose	AG	0	Erythritol	0	0
Saccharose	AG	0	Inulin	0	0
Mannitol	AG	0	Glycerol	AG	0
Dulcitol	0	0	Indol	0 or S	0
Salicin	0	0			

0 = absence of clotting in milk, absence of acidity and gas in sugar media, absence of liquefaction in serum and gelatin. A = acid. G = presence of gas. S = slight reaction.

Conclusion.

Fœtor oris of tonsillar origin does not seem to be rare. In some cases evident lesions of the tonsils are present, such as white grains in the cryptæ. In other cases no gross lesions are present, the tonsils being merely enlarged and at times apparently normal. In this type of case, swabs from the tonsils and fauces will reveal the presence of bacteria producing, when grown on agar, the same smell as that noticeable in the patient's breath. According to the classification introduced by Chalmers and myself, Bacillus I. belongs to the genus Escherichia, Bacillus II. to the genus Alkaligenes. For Bacillus I. the name *Escherichia colofœtida* (*Bacillus colofœtidus*) might be used; to Bacillus II. the name *Alkaligenes alkalofœtidus* (*Bacillus alkalofœtidus*) might be given.

I shall be pleased to supply workers interested in the subject with cultures of the two bacilli.

A CASE OF HERMAPHRODITISM.

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THROUGH the courtesy of Prof. Roy Dobbin, the Royal School of Medicine, Cairo, I had an opportunity of examining this interesting case which had been admitted to the Gynæcological Section of Kasr-el-Aini Hospital.

The patient was diagnosed as suffering from a Bartholin cyst and was recommended for admission to hospital. "She" had doubts as to her exact age, which was given as 18 years, and her nationality was Egyptian. Her parents had died while she was an infant and there is no history of previous illness. Menstruation had never appeared and the patient was unmarried. About ten months before admission her attention was directed to a small lump about the size of an olive stone in each of the labia, and about two months later these had commenced to swell, but remained more or less painless. The bowel and bladder function was stated to be normal and micturition was painless. The general facial appearance suggested masculinity. The eyebrows were bushy, and some hair, although not of a very coarse character, was present on the upper lip, the chin, and the upper portions of each cheek. The forearms, upper arms, lower limbs, and thighs were muscular and hairy. The hands and feet were large, the shape of the fingers being distinctly masculine. There was some prominence of the scapulæ and the base of the sacrum and pelvic outlet were narrow. The pubic arch was not wide-angled. Hair was plentiful over the upper part of the back and the base of the neck. Examination of the chest revealed the absence of female breasts, the mammary regions being definitely masculine in appearance, and there was an entire absence of female areolæ. Throughout the examination, the patient was inclined to be emotional. The pubic hair had been removed according to Egyptian custom. The labia majora were well formed and on palpation of these structures a localised mass was detected in each; the mass on the left side was about the size of a plum-stone and its margins were more definitely demarcated than that on the right side, which was rather larger, less clearly defined at the margins, and not so tense on palpation. Manipulation did not elicit complaint of pain or discomfort. The swelling on the left side could be pushed up into the inguinal canal, whereas that on the right side was only reducible with difficulty to the interior of the ring but not to the interior of the canal. Circumcision having been performed at an early age—an Egyptian custom—only a stump indicated the root of the clitoris or penis. The vaginal opening was represented by a small area covered with mucous membrane into which the urethra opened. There was no vaginal orifice but only an invagination of the mucosa which did not admit even the tip of the little finger. Rectal examination failed to reveal the presence of any internal female genital organs. A history of sexual inclination was not available. It should be noted that the voice in this case was of female type.

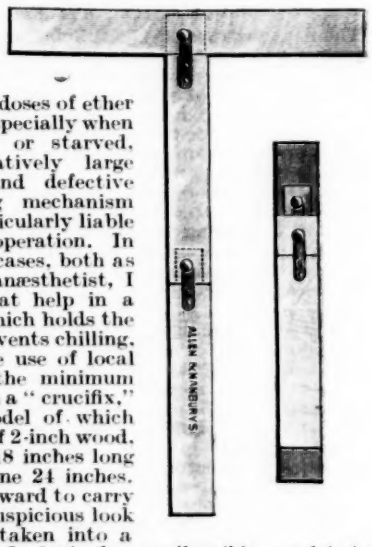
After observation in hospital it was decided not to undertake operation, and therefore a histological examination of the small labial masses was not possible to determine the absence or presence of gonads, although the absence of the majority of the secondary female characters, the male form of the body, the large bone formation, the well-developed muscles, and the growth of hair, in conjunction with andromastia, might reasonably suggest their presence.

This case is, I think, of considerable interest to the medico-legal expert, who from time to time may be called upon to express an opinion on doubtful sex cases.

New Inventions.

AN AID TO OPERATIONS ON INFANTS.

IN operating on babies there are certain special difficulties. Owing to their light weight and powers of contortion they need careful holding for greater or less time, according to the type of anæsthetic, and their small size makes it difficult for the holder to avoid the operators. They are very sensitive to overdoses of ether or chloroform, especially when they are toxic or starved, and their relatively large surface area and defective heat regulating mechanism make them particularly liable to chills during operation. In work on these cases, both as operator and anæsthetist, I have found great help in a simple device which holds the child firmly, prevents chilling, and permits the use of local anæsthesia or the minimum of general. It is a "crucifix," the original model of which was a simple T of 2-inch wood, the cross limb 18 inches long and the main one 24 inches. As this was awkward to carry and had an inauspicious look about it when taken into a private house, I devised a collapsible model in duralumin, with a sponge rubber padding, and this has been very satisfactory. The baby is wrapped in warm cotton-wool over as much of its body as possible according to the operation to be done, and is bandaged firmly to the frame. Subcutaneous salines or artificial respiration can be given without removing it. Incidentally, it is interesting to see how often a restless baby will settle down and go to sleep as soon as it is firmly fixed. It suggests that possibly there were advantages, at any rate to the parents, in the tight swaddlings which so many nations used for so many ages. The manufacturers are Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.1.



DENIS BROWNE, F.R.C.S. Eng.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY.

AT a meeting of this Section, held in conjunction with the British Psychological Society on March 11th, the chair was taken by Sir ROBERT ARMSTRONG-JONES, President of the Section of Psychiatry. A discussion on the

RÔLE OF PSYCHOTHERAPY IN THE PSYCHOSES

was opened by Mr. H. DEVINE. He said that his first hope that the new teaching might cure some of his psychotic patients had not been realised. The causal factors in mental illness were more complex and sinister than appeared at first sight, for the original notion of sexual trauma as the essential factor in neurosis had had to give place to that of "congenitally determined libido-fixation," a term sufficiently resembling "psychopathic heredity" to damp the hopes of ardent psychiatrists. So far as the psychoses were concerned the therapeutic possibilities of psycho-analysis were practically negligible; Freud himself had stated that the future would probably attribute far greater importance to psycho-analysis as the science of the unconscious than as a therapeutic procedure. The failure might be ascribed to various factors—e.g., the inability of the patient to coöperate, his imperfect sense of illness, the institutional relationship between patient and doctor, the lack of a suitable technique, or the definite physiological disorder related to the psychoses. Dr. Devine had at one time hoped that paranoia might be amenable to analytic therapy but had been disappointed. Karl Abraham, Pierce Clarke, and others had reported favourably on the analysis of manic-depressives between the attacks, but Dr. Devine had always found the depressive patient singularly impenetrable. The psychosis was the expression of an obscure disturbance of physiological rhythm, and when the attack was over the sooner the patient forgot all about his illness the better. Analysis in the interval might only give him more psychological material to express when he became ill again.

To say that at present we had no specific remedies capable of curing psychoses was not to say that treatment had no value. On the contrary, nowhere in medicine were therapeutic efforts more necessary and at times better rewarded, and among them psychotherapy undoubtedly held a very high place. A large proportion of the daily activities of doctors and nurses in a mental hospital must be included under the heading of psychological treatment. To refuse to admit that psychotherapy could influence the psychology of a patient because his body was biochemically unwell would imply that the mind was altogether independent of the body. Even the administration of a vaccine or a mere physical examination might have striking psychological results. Though the psychotherapeutic methods used in mental hospitals could not be called causal or specific they were not haphazard and unsystematised. At the outset it was essential to take seriously what the patient said, as a free outlet for his beliefs relieved tension and at the same time gave the psychiatrist essential knowledge of the phenomenal world of his patient. Clinical, physiological, and psychological studies all served to reveal different aspects of the same reality, although the morbid impressions of the psychotic could not be suggested or analysed away. As the psychiatrist could not dissipate what was abnormal his main task must be to develop what was normal, to stimulate social consciousness, and to help the patient to pass from purely individual impressions to broader social relationships which he could share with his fellow men. Mental therapy aimed at exercising the function of consciousness, in the hope that the narrow, morbid, psychic content might melt away or at least be relegated to the background as wider social relations became established. It relied upon simple, natural stimuli such as music, games, occupational therapy, and general conversations, treating the patient as if he were sane and helping him to regain the art of living, to attach his emotions and sentiments to external objects, and to exercise his intellect. This therapy, though unimpressive, was often successful. It was essentially active, and the psychiatrist could not remain in the background as a shadowy figure like the analyst; he had to be friend as well as doctor. It was difficult to disentangle mental from physical treatment, for the manner in which a patient was nursed was almost as important as the actual attentions themselves. In the psychoses, as in other illnesses, recovery was something that happened, independent in a great degree of therapeutic efforts. The old French saying "Je le pansay, Dieu le guerist" expressed a very real truth. Psychotherapy, however, was a method which did something to stimulate the biopsychic organism to regain its normal state of equilibrium in relation to its social environment. He did not question the valuable services rendered to psychiatry by the various schools of psychopathology, particularly the work of Jung on dementia præcox. The mechanisms described by Freud were constantly exhibited in psychotic patients, but it was his impression that psycho-analytic practice had not kept pace with the increasing elaboration of its theory. At the moment when something happened within a patient, so that he became uncertain of the reality of his delirious experiences, it was essential to utilise all the therapeutic arts, for injudicious handling at this crisis might drive him back into his dreams once more.

Psycho-analysis in the Psychoses.

Dr. E. A. GLOVER said that the analysis of maladapted personalities led to a qualitative familiarity with mechanisms which, given a quantitative factor, were commonly regarded as psychotic—e.g., the mechanism of projection—which in the normal individual performed the same protective function as in paranoid states. Psycho-analysis had been primarily constructed for the hysteria and obsessional neuroses, in which a relative stability of ego function existed, the ego giving asylum to the neurosis and trying to encapsulate it and continuing to exercise its important function of reality proving. The foundations of psychosis were laid when, to a profound instinctual disturbance was added a disturbance in the structure of the ego. Many of the sensational features of the manic-depressive group in the depressive phrase were due to a usurpation of ego function by the super-ego, while the exalted phases were characterised by an abandonment of function by the super-ego. Depressive states represented a malignant hypertrophy and exalted phases an acute descending paralysis of this unconscious conscience. The forces which stimulated the hypertrophy of the super-ego were essentially the destructive and particularly the sadistic impulses. At the moment when externally directed activity was slowly blanketed by inhibition, the internal regulative system was gradually heating up under the strain of additional sadistic charges until it finally flamed into the state of melancholia. Transference involved a temporary splitting of the ego into its components and the projection of the super-ego on to the analyst. The urgent aim in the treatment of melancholia was the speedy provision of the safety-valve of an externalised and undamageable unconscious conscience. If the super-ego were insufficiently projected, the depression could not be prevented, but the acuteness of the crisis could be lessened by modifying the super-ego by lending it some degree of tolerance, and by rescuing the ego by lending it some degree of resistance. This was done by gathering up the most urgent sadistic material, interpreting it, and indicating the possibility of a more tolerant super-ego and a more resistant ego—in other words, by lessening internal guilt. The manœuvre involved complete absence of impatience, a close scrutiny of every critical manifestation, and a feeling

for psychic danger signals. The proof of success lay in the lifting of repression from unconscious material. Sometimes the analyst had to be more accessible and supporting than was his usual rôle, as the melancholic was apt to regard passivity as indifference.

Analysts in the past had been to some extent biased by the sensational symptoms and had accepted too freely the alleged inaccessibility of psychotics. The dramatic quality of the symptoms was given proper valuation when it was understood that many of them were attempts at self-cure. It had also been found that the main difficulty was not the absence of positive transference, but the heavy bias of concealed negative transference which was performing a protective function. In paranoia there was a double regression of the libido and the ego, but the attachment to objects was by no means completely abandoned, and across this somewhat frail bridge analytic contact could be established, although until anxiety and guilt factors had been reduced the symptoms must continue to represent a hypertrophied protective and restitutive function. Ultimately, of course, the delusional system must be drawn into the analysis, and the first real sign of success was when a tentative test showed that this system was beginning to take on the character of obsessive thinking. In dementia præcox the analyst must for a long time lie low. He must estimate the state of fixation of the libido; he must know which components of infantile sexuality had been accentuated, and the type of primitive ego-mechanism represented in the regression; and he must understand what protective function these mechanisms performed. Sadistic impulses were always found in great excess. When he could estimate these factors he could regulate his interferences. Meantime, his relations with the patient depended on the remnants of the capacity for narcissistic identification which were primitive and exceedingly unstable but, nevertheless, had in the past been underestimated.

The aim in all cases was to release the patient from anxiety and guilt, and the principles involved were the same for the psychotic as for the neurotic, with the exception that in treating a psychotic the analyst must learn to speak the language fluently and be ready to provide the patient with a sort of psychological pidgin-English for phantasy expression.

Dr. Glover believed that the problems of the psychoses would never be solved until the problem of child psychopathology had been solved. It would be as unsound to judge of methods of treating the psychoses from existing institutional data as it would be to estimate the value of an intravenous solution in treating early tuberculosis from the results of administering cod-liver oil to a dying consumptive.

Dr. R. D. GILLESPIE said that the criteria for the psychotherapeutic amenability of psychoneuroses held also with additions and modifications for psychoses. It used to be believed that psychotics lacked ability for positive transference, but this was not true of many. On the other hand attitudes of superiority and hostility and crude negativism frequently made even indirect psychotherapeutic approval impracticable. It was useful to begin by dealing with the neurotic superstructure that existed in some psychoses, as this gave an intelligent patient a feeling for some fundamental principles. Rarely the talking out of a precipitating situation had been known to be followed by rapid recovery in a recent schizophrenic psychosis. Personality-analysis was of special importance for two reasons: first that it would give the patient much additional insight, and secondly from the point of view of the type of adjustment to be aimed at. If certain psychoses were regarded as habit-deteriorations, then an investigation of the personality became of the first importance. Since the psychotherapy of psychoses was so different, attempts at prevention, which had hardly ever been made, should be the aim of the future. At Zurich, for example, it was thought that the children's psychopathic clinic had already done something to remove children from a candidature for schizophrenia. Other important general points were occupational therapy, carefully used; and a medical and nursing staff, adequate in numbers, temperament, and training. Prolonged narcosis had lately been coming into fashion again as a means of increasing therapeutic rapport in the phases of emergence from the sleep so induced.

The Child Psychotic.

Mrs. MELANIE KLEIN pointed out that the analysis of small children showed that external reality was at first simply a mirror of the child's own instinctual life. The world was peopled in the child's imagination with objects who were expected to treat the child in the same sadistic way as the child was impelled to treat the objects. It was filled with dangerous objects, dangerous because of the child's own impulse to attack them. The psychotic valued the world at the original level, and the main groupings of the psychoses corresponded to defences against the main developmental phases of sadism. Generally the diagnostic features of psychosis in childhood were essentially different from those of adult psychoses—e.g., the most sinister feature in a child of four would be the undiminished activity of phantasy systems characteristic of a child of one. Many cases of schizophrenia of this kind were classified as "arrested development" or "asocial tendency." Schizophrenic traits were less noticeable in a child because in a lesser degree they were natural. Automatic obedience was regarded as docility and negativistic behaviour as naughtiness. Severance from reality, dissociation, lack of emotional rapport, silly behaviour, and talking nonsense were overlooked or disregarded in children. Fully developed schizophrenia and the occurrence of schizophrenic traits was far more general in childhood than was usually supposed.

Dr. H. YELLOWLEES expressed his general agreement with Dr. Devine, and had no doubt that the psychotherapy practised in mental hospitals was an invaluable factor in stimulating recovery processes. He thought that its value in incurable cases might be assessed by the extent to which the inevitable enfeeblement was arrested.

Dr. W. H. STODDART was satisfied that manic-depressives were amenable to psycho-analysis. He was not optimistic about the cure of paranoiacs, but thought that analysis gave them insight and delayed the progress of the disease. The presence of hallucinations made them much less accessible and the prognosis therefore less hopeful. The extensive organic changes in dementia præcox made him sceptical of the benefit of analysis.

Psycho-analysis in the Manic-depressive.

Dr. SYLVIA PAYNE said that the value of psycho-analysis must be assessed by the progress of knowledge as well as by its therapeutic success, for the former was the immediate necessity for the latter. Dr. Karl Abraham had noted certain similarities between manic-depressive insanity and obsessional neurosis and had concluded that the one shaded off into the other. He had found that at the outbreak of a depressive attack the patient regressed to a stage of development slightly earlier than, but closely connected with, the stage to which the obsessional neurotic regressed. Abraham, analysing the psychotic just as he came out of the depressed state, found that he was able to increase accessibility and transference and modify the hostile and irritable attitude towards the world. Several patients, after a considerable amount of analysis, showed a tendency to develop transitory psychogenic symptoms and these, instead of being psychotic, had been obsessions, phobias, or conversion symptoms. There was evidence also of lasting cure, and the patients experienced relief from mental stress. The paranoid state could also be modified by analysis.

Dr. M. G. HARRIS spoke of the value of developing the atmosphere of suggestion and re-education, as even the organic conditions contained a very large functional element.

Dr. DORIS ODLUM emphasised the importance of the doctor's personality; certain physicians were successful with some patients and useless with others. She

thought that in future we might try to prescribe personalities as much as methods. With the present ratio of staff and patients in mental hospitals any kind of psychotherapeutic research was impossible. It would be valuable if there could be demonstration wards where work of this kind could be undertaken.

Dr. F. DILLON considered that there was scope for the psycho-analytic principle in a greater proportion of cases than was commonly recognised, though improperly applied it was capable of doing more harm than other methods. The main danger arose from the application of ready-made rules and injunctions without reference to the individual patient. To decide between the active and passive rôle was no easy matter. The analyst must be content with provisional interpretation for stages, must make a judicious use of loosening mechanisms short of interpretation, and must be on the watch to head the patient off dangerous and highly charged ideas such as incest and suicide.

Dr. T. A. ROSS, who had taken the chair on the departure of Sir Robert Armstrong-Jones, asked Dr. Devine whether he thought that psycho-analysis, properly applied, was possible in mental hospitals under existing conditions.

Dr. DEVINE thought not, and expressed the opinion that every psychiatrist would agree that, although psycho-analysis might elucidate the psychoses, it could not cure them.

Dr. GLOVER, in reply, emphasised again that every thing that happened in mental hospitals was essentially a psychotherapeutic device, and compared the "dangers" of psycho-analysis to the danger of any potent drug.

TUBERCULOSIS ASSOCIATION.

AT a meeting of this Association, held at the British Institute of Radiology on March 14th, Sir STCLAIR THOMSON, the President, being in the chair, two subjects came up for discussion.

SENILE TUBERCULOSIS.

Dr. R. A. YOUNG introduced this subject. The study of tuberculosis as it manifested itself in old people had, he said, been largely neglected. Among the lay public an erroneous opinion was widely current that tuberculosis in old persons was exceptional and its importance slight. The elderly themselves too often accepted their symptoms as incidental to the period of life they had reached and consequently failed to seek advice. This was the more to be regretted since the diagnosis was often much more difficult than at younger ages. From the clinical aspect senile tuberculosis of the lungs might present certain special characters. Its course was chronic and not infrequently afebrile throughout; the course was generally slow, tending to quiescence if not to arrest, though there were often exacerbations which were regarded as colds or as attacks of bronchitis; the physical signs were often atypical and even equivocal. The disease might masquerade as typical chronic bronchitis, emphysema, asthma, or even as progressive cardiac weakness and failure. The toxic symptoms were usually slight or absent, and there was little tendency to local spread and almost none to dissemination. Dr. Young briefly referred in passing to the late John Brownlee's suggestion, put forward on statistical grounds but supported by these clinical observations, that senile tuberculosis might be a distinct variety of the disease, even possibly due to a special or modified strain of the tubercle bacillus. Among the factors influencing the type of disease as seen in old people were the hardening of the cartilages of the ribs, especially the upper ones, leading to a stenosis of the upper thoracic aperture; the more shallow respiration of old people; the feebler circulation; the notable and progressive diminution of the vital capacity. The influence of debilitating conditions or of intercurrent infections or diseases, such as diabetes, might promote the activation of dormant lesions; while, on the other hand, the relative venosity of the blood, the general tendency to fibrosis in senile atrophy of organs, and the lessened expulsive force of cough were all factors which would tend to limit the spread of the disease. In old people tubercles showed more tendency towards calcification and fibrosis than to caseation, and consequently any cavities that might form were often localised, small, and fibrosed. Circulatory defects developed earlier in old than in younger patients, notably right ventricle hypertrophy with gradual failure, resulting in early dyspnœa associated with œdema of the legs. Terminal miliary lesions seemed to be much more common in old people than was generally supposed.

Ætiology.—It was generally assumed, said Dr. Young, that the development of senile tuberculosis was really a reactivation of or a metastasis from old arrested or quiet lesions, dating from early life. It was almost inconceivable that a primary infection could be delayed till the latter end of life, although it was open to argument whether reinfection or superinfection might not occur. It was tempting to suppose that exposure to massive doses of bacilli, either by inhalation or ingestion, might be the factor determining the onset of activity in some cases, where the previous infection had been minimal and the arrest complete.

Clinical Types.—Although the disease might manifest itself in old people in any of the ordinary clinical types (acute miliary, acute caseous, fibro-caseous or fibroid) the general tendency was towards the more chronic forms, and many cases were atypical both in their evolution and in their course. Certain more or less common types could, however, he thought, be differentiated.

1. Pleural—generally with effusion.
2. Bronchitic or emphysematous types.
3. Asthmatic.
4. Hæmorrhagic: (*a*) from an old fibroid lung or from a healed cavity; (*b*) in association with high blood pressure.
5. Typical chronic fibroid or fibro-caseous cases with slowly progressive course.
6. Cases with predominating cardiac symptoms and signs.
7. Acute cases, generally terminal. These were for the most part miliary, but occasionally caseous pneumonic lesions might be found.

Dr. Young considered all these types in detail, pointing out that the bronchitic and emphysematous types perhaps constituted the most important group since they were most commonly overlooked and even entirely unsuspected, often appearing as typical cases of chronic bronchitis with more or less emphysema. In these cases, as Kingston Fowler had pointed out, a useful hint might be obtained from the history; the abrupt cessation of the usual summer intermission of cough should lead to the suspicion of tuberculosis.

The *clinical features* of senile tuberculosis were very varied. Pain, night sweats, and fever were rare; cough was often troublesome but might be slight, since the stimulus needed was greater than in younger subjects. Dyspnœa was often a marked feature. *Physical signs* in chronic fibroid or fibro-caseous cases might be typical of the lesions present, but in bronchitic or emphysematous cases might be almost negative. Slight impairment of note at one apex or notably weaker breath sounds at the right apex should excite suspicion. In view of the importance of making a correct diagnosis the speaker urged that bacteriological examination of the sputum should be carried out in every elderly patient with cough and expectoration, and that where practicable an X ray examination should also be made.

Treatment must depend upon the age, the social conditions and circumstances of the patient, and upon the type of the disease. He felt, however, that the elderly patient was out of place in a sanatorium, where the routine, rigour, and restrictions might even be harmful. Although treatment by

artificial pneumothorax was seldom recommended for the elderly patient, age need not necessarily be a bar if other conditions were favourable. Thoracoplasty was contra-indicated, and tuberculin rarely necessary, though in afebrile cases of slowly progressive type its cautious use might be permitted.

In conclusion, Dr. Young briefly referred to extra-pulmonary types of senile tuberculosis, lupus and surgical tuberculosis of the genito-urinary system being the least uncommon.

Discussion.

Dr. E. J. MACINTYRE spoke of the difficulty of controlling such cases and referred to the percentage of unnotified cases of patients over 50 years of age in the Borough of Bermondsey for the years 1925–29. In industrial areas especially it was important to have close coöperation between the general practitioners and the tuberculosis officers, and between tuberculosis officers and the officers of poor-law institutions.—Dr. V. S. HODSON said that the really important question in regard to prevention was the method of infection. Was it exogenous or endogenous? If endogenous, the tubercle bacilli had remained latent for many years, but there was no inherent improbability in this. If the bacilli could remain latent for 10 or 20 years, why not 50? If senile tuberculosis was a first infection, why was it localised as a rule and so seldom generalised?—Dr. S. VERE PEARSON said that even very old patients could be made quite comfortable in a sanatorium. He had done artificial pneumothorax in one or two patients over 60 who had got on well. He had also given sanocrysin to one such patient with considerable benefit. He was glad that stress was laid on the danger of old patients infecting others, and he gave some instances of this from his own knowledge.—Dr. W. C. FOWLER asked whether high blood pressure was associated with active disease in senile tuberculosis.—Dr. H. O. BLANFORD said that it was obviously possible so to modify sanatorium conditions as to render it suitable even for old persons. One great benefit of this treatment which was sometimes apt to be lost sight of was the comfort and help given by trained tuberculosis nurses.—Dr. J. WATT said he had been struck by the number of cases in which the patient had given no history of contact with tuberculosis but in which on close questioning it was found that the mother or father had suffered from chronic bronchitis. He confirmed what Dr. Blanford had said as to the value of sanatorium treatment for old persons; bronchitis seemed often to be secondary to the tuberculosis instead of the other way about, and in many cases the bronchitis cleared up as the winter advanced.—Dr. J. R. DOBSON gave details of three senile cases he had had in 12 days, including a man 73 years of age.—Dr. DINGLEY said that the admission of old patients to sanatoriums depended partly upon the season of the year, but even more upon the type of sanatorium.—Dr. G. T. HEBERT confirmed Dr. Young's remarks as to the necessity of examining the older members of a family in which the younger members in succession developed the disease. Physical signs might be no guide whatever, especially in bronchitic cases. He often advised against sanatorium treatment during the winter for old people.—Dr. F. R. WALTERS, speaking from his experience both as tuberculosis officer and as sanatorium superintendent, said his impression was that senile tuberculosis was not as often notified as it should be, and he stressed the importance of examining sputum in all cases of chronic bronchitis, not only in the old. Senile tuberculosis was no exception to the rule that, apart from acute or subacute cases, a search into the history would often show a previous breakdown in health which was probably though not obviously tuberculous.

The CHAIRMAN spoke of the difficulty of classification; tuberculosis in the young might be senile in type, and tuberculosis in the aged might be acute in type. Senile tuberculosis in the larynx might be very difficult to diagnose. At Midhurst he had only had three cases sent as tuberculous which turned out to be malignant, but on the other hand he had had literally dozens of cases sent to him as cases of malignant disease of the larynx which proved to be tubercle. In the majority of senile patients with tuberculosis of the larynx the sputum remained negative for years. He joined issue with Dr. Young about treatment, because if these patients could not be sent to sanatoriums, what was to be done with them? Patients who neglected themselves, in whatever social class they might be, died. He gave notes of several illustrative cases, including two in whom the disease was arrested but recurred, and both patients died. Old patients were much less likely to get over a relapse.

Reply.

Dr. YOUNG said he believed in practically all cases the infection was endogenous. Reactivation was often due to reinfection, or rather, superinfection. He did not wish to be thought in any way to criticise sanatoriums; it was simply that as they were usually run they were not suitable for the very old.

DIAGNOSIS AT A TUBERCULOSIS DISPENSARY.

Speaking on the problems of differential diagnosis, Dr. P. ELLMAN (tuberculosis officer, East Ham) said that at a tuberculosis dispensary there was a great temptation to consider cases sent up with symptoms of progressive loss of weight, fever, hæmoptysis, and so on, as potential cases of pulmonary tuberculosis. These symptoms, however, were not uncommon in other pulmonary and extra-pulmonary lesions. The speaker then referred to cases he had himself met with whose histories led him to suspect the possibility of pulmonary tuberculosis. Of these, the most commonly met with were cases of *naso-pharyngeal sepsis* with a secondary bronchitis, or even what was often termed "catarrhal apices," producing cough with blood-stained expectoration, general malaise, and loss of weight. Almost any nasal, pharyngeal, and sinus affection would produce a secondary bronchitis, localised or generalised, with symptoms resembling those of pulmonary tuberculosis. The next most frequently met with type of cases was *mitral stenosis*, and here a routine location of the apex-beat was of great value. In these cases the symptoms simulating pulmonary tuberculosis were, of course, due to pulmonary congestion secondary to the mitral disease. A third group consisted of cases of *specific aortitis* with or without aneurysmal dilatation and aortic regurgitation. X ray screening would clear up the diagnosis in these cases. *Neoplasms* of the lung in his own experience came fourth in in order of frequency, although doubtless in the experience of others this group would take an earlier place. Any patient of middle age with a series of chest symptoms which might suggest pulmonary tuberculosis but which were out of all proportion to the physical signs should be suspected of suffering from a neoplasm. He had had several cases of *bronchiectasis* with histories and in some cases physical signs almost identical with those of pulmonary tuberculosis. Here the value of an injection of lipiodol was well recognised; indeed, in certain cases where physical signs were limited to the apex or upper lobe it was almost impossible to distinguish between fibrosis, tuberculosis, carcinoma, and bronchiectasis without a lipiodol injection. *Hyperthyroidism* was another condition in which the symptoms closely resembled those of pulmonary tuberculosis, and the speaker described three cases of exophthalmic goitre suspected of phthisis whom he had recently seen at the dispensary. Dr. Ellman then referred briefly to the *pneumomycoses* and *pneumonokonioses*, and described an interesting case which proved to be one of broncho-moniliasis. Finally, the speaker suggested that a dispensary to work efficiently should be a department of a hospital where all facilities were available, or at any rate

it should be in close contact and have a working arrangement with a hospital.

The CHAIRMAN spoke of the value of X rays in clearing up difficult diagnoses.—Sir P. H.-S. HARTLEY believed that pulmonary tuberculosis began at the apex and worked downwards. Hilum tuberculosis, except in very young children, was very rare. In tubercle he thought there was always some small alteration in percussion note, and he urged the necessity of a careful examination of the apices in regard to this point. Mitral stenosis and tubercle were once believed to be antagonistic, but although the combination did occur it was certainly very rare. He himself had never seen a case of exophthalmic goitre with pulmonary tuberculosis. He thought it was incumbent on the tuberculosis officer not only to state that a given case was not one of tuberculosis, but also to give a definite opinion as to the condition responsible for the symptoms.—Dr. F. A. LUCAS HAMMOND said that as sanatorium superintendents they were often compelled to follow up mistakes that had already been made. It was sometimes difficult to alter diagnoses sent up to them by people who ought to know; and in other cases it might mean depriving a man of his pension. One condition not mentioned by Dr. Ellman was hepatic abscess; he himself had had two such cases sent to him, which cleared up under emetine. Many cases of fibrosis were really cases of silicosis, not recognised as such. He thought they ought to go through every case with a completely unbiased mind.—Dr. C. H. C. TOUSSAINT concurred with the last speaker in regard to the number of patients sent to sanatoriums as tuberculous who were not tuberculous, and he showed a number of slides illustrating some of these cases.—Dr. P. A. GALPIN (tuberculosis officer, West Ham) said that he had had a number of cases of neurosis sent to him as tuberculous. These cases were sometimes of considerable difficulty, showing symptoms such as loss of weight and of appetite, cough, expectoration, and sometimes signs at one apex. The neurosis developed as a result of the stress and strain of domestic life. Banti's disease, or splenic anæmia, sometimes masqueraded as abdominal tuberculosis. He had also had one or two cases in which underweight was the striking feature, but which he believed were really cases of infantilism. Cœliac disease might lead to difficulty in diagnosis; and this he thought sometimes led to infantilism. Cases of chronic pneumonia should, he thought, be kept under observation.—Dr. YOUNG drew attention to the possibility of dysentery leading to a mistaken diagnosis of pulmonary tuberculosis, illustrating this by two cases in his own experience.

PATHOLOGICAL SOCIETY OF MANCHESTER.

AT a meeting of this Society on March 12th a paper entitled

Recent Work on Streptococci

was read by Dr. A. W. DOWNIE. Before the work of the Dicks, he said, the view was held by some observers that scarlet fever was a local streptococcal infection of the throat, and that the general symptoms were due to a diffusible toxin produced by these organisms. This view was not, however, generally accepted until more direct evidence was obtained by experiments on man. A notable advance in the state of our knowledge was made by the Dicks, who produced scarlet fever in human volunteers by swabbing their throats with pure cultures of hæmolytic streptococci. They further demonstrated the production of toxins by means of skin tests in susceptible individuals. Further work on the production of antitoxic sera in horses, and the effect of such sera in the treatment of scarlet fever, and the results of active immunisation by injections of toxin, afforded additional evidence of the view that scarlet fever is primarily a streptococcal infection. Whilst scarlet fever antitoxin had proved valuable when used during the acute stage of the disease, the reports of various observers seemed to indicate that it is much less efficacious in the treatment of septic complications. Moreover, the reports published by Kinloch, Smith, Taylor, and others, and the experimental work of Parish and Okell, suggested that antitoxin immunity does not prevent local streptococcal infection. It had been found that toxins apparently similar to those obtained from cultures of scarlatinal streptococci are produced by hæmolytic streptococci from other human infections such as erysipelas, puerperal fever, and cellulitis. Whilst some of the published work seemed to show that the toxins of erysipelas and puerperal fever differ immunologically from those of scarlet fever, the evidence appeared to be in favour of the view that they are identical and can be neutralised by scarlet fever antitoxin. The difference between the toxigenic properties of scarlatinal organisms and those from other sources seemed to be quantitative rather than qualitative. Recent studies on puerperal sepsis in relation to antitoxic immunity as indicated by the Dick test, however, did not suggest an exact correlation between such immunity and immunity to streptococcal infection during the puerperium. Further, the cases recorded recently by H. Burt-White[1] did suggest that the treatment of puerperal septicæmia by scarlatinal antitoxin yields highly satisfactory results. In streptococcal infections, other than scarlet fever, it could hardly be expected that the results of treatment with antitoxic sera would be as good as in that disease, because all virulent streptococci of the hæmolytic group had not been shown to produce toxin, and toxin of the skin-reaching type was not the only means by which streptococci exert their pathogenic effects. In immunity to hæmolytic streptococci two factors apparently had to be considered: (1) antitoxic immunity, and (2) antibacterial immunity.

Dr. Downie described experimental work bearing on the nature of immunity to hæmolytic streptococci. A discussion followed.

[1] THE LANCET, Jan. 4th, p. 16.

BRIGHTON HOSPITALS.—At the meeting of the governors of the Royal Sussex County Hospital, the Duchess of Norfolk, the retiring president, spoke of a recent anonymous gift of £3000 towards the hospital's radium fund, and remarked that if people wanted to give a donation for anything special they could not do better than give it to this fund. No fewer than 335 motor accident cases were attended to during the year, 92 being admitted as in-patients, at a total cost to the funds of about £1500; and Brigadier-General Brownlow remarked that of that sum only about a quarter was recovered, and that the real trouble was that people from anywhere in the country who were brought in occupied beds for which local people had been waiting for weeks, and sometimes months. Viscount Brentford was appointed the new president.—The Royal Alexandra Hospital for Sick Children claimed, in its report, to be equal to any other children's hospital in the country; and notwithstanding the many additions and alterations in recent years there was still a waiting list of 50 or more patients. Owing to the operation of the Rating and Valuation Act the rates were £308 instead of about £30, and the general account had been overdrawn to the extent of £1000.—Brighton, Hove, and Preston Dispensary, the Hove branch being the Hove Hospital, showed a deficit on the year's working of £510; and it was claimed at the annual meeting of the governors that Hove Hospital was the first in Sussex to possess radium of its own and to hire it out to medical men and hospitals in the county.—In regard to the Sussex Throat and Ear Hospital, an extension scheme has been in the making for many years; but with £3000 in hand, the belief was expressed that operations would begin before the next annual meeting.—The Sussex Maternity and Women's Hospital celebrates its centenary this year. Last year's work marked a deficit of £1353. Private wards brought in £1000, an increase of over £200 compared with 1928. The Duchess of Richmond and Gordon accepted the presidency.—Erected 98 years ago, the Sussex Eye Hospital is to be rebuilt. More than half of the £25,000 needed has been raised, and it is hoped to begin building operations towards the end of this present year.

Reviews and Notices of Books.

A TEXT-BOOK OF PSYCHIATRY.

For Students and Practitioners. Second edition. By D. K. HENDERSON, M.D. Edin., F.R.F.P.S. Glasg., Physician-Superintendent, the Glasgow Royal Mental Hospital; Lecturer in Psychological Medicine, University of Glasgow; and R. D. GILLESPIE, M.D. Glasg., M.R.C.P., D.P.M. Lond., Physician for Psychological Medicine, Guy's Hospital Medical School. London: Humphrey Milford, Oxford University Press. 1930. Pp. 526. 18s.

THIS book is admirably planned and written; the arguments on many disputable matters are well summarised, and the whole field is adequately covered. The student will be led on by the easy style and interesting matter to study more deeply a subject which he too often tends to neglect, and the practitioner will find readily accessible all the enlightenment he may need in general practice; while for those who are specialising in psychiatry ample and yet concise information is supplied on every aspect of his work.

The bias of the book, in so far as any exists in so well-balanced an exposition, is towards an emphasis on clinical observation of mental phenomena and psychogenic factors in the neuroses and psychoses; while physical and hereditary considerations are fully dealt with, the book as a whole counters the current tendency to seek any complete solution of the problems of diagnosis and treatment in mental disorder in the physical concomitants, and urges throughout a due investigation of all the complex mental and emotional and social elements contributing to causation, and impending cure, of mental illness. The classification adopted is simple and logical, in so far as this is possible with our present knowledge; the author discusses various well-known systems and their difficulties, and gives adequate reasons for the adoption of the simple classification here used. Most of those familiar with the problems of diagnosis and classification will agree that it is an improvement on that which is at present the statutory classification.

The chapter on ætiology, that most difficult subject, is excellently handled; the data available on arguable problems, such as heredity, auto-toxæmia, and many other ætiological factors are set forth fully and fairly, and each section of considerable length is provided with a clear summary of its contents, all points of view and their relative weight being duly represented. The method of examination recommended is thorough and practical; we suggest, however, that the physical examination can usefully precede or accompany the mental one, since hallucinations and delusions can often be most easily elicited when asking about or examining bodily functions, and a thorough leisurely and detailed physical examination helps in establishing contact and confidence. The chapters on individual syndromes contain a minimum of clear general description, and are very fully illustrated by well-selected case-histories, headed by pithy summaries. These serve to give a really vivid mental picture of the type of case described, enabling even the tyro to realise just what are the salient facts of each. The influence of Adolf Meyer is apparent, and while each case described illustrates a type, yet the emphasis is always laid on the consideration of any particular patient as an individual, with his own personal make-up and problems. In treatment, while ordinary nursing and medical matters are adequately dealt with, individual psychotherapy is always stressed as all-important. Occupation therapy is given a valuable chapter, though the recent discussions of this matter, brought into prominence by Simon, might well have been added. The final chapter on legal considerations deserves especial praise.

The second edition differs from the first only in a few minor points, chiefly in statistics of more recent date. This book well deserves the place it is taking as a standard text-book of moderate size.

HÆMORRHOIDS.

The Injection Treatment and Pruritus Ani. By LAWRENCE GOLDBACHER, M.D. Philadelphia: F. A. Davis Company. 1930. Pp. 205. $3.50.

IN this monograph hæmorrhoids are classified as external, internal, and mixed or intero-external. Local excision of external piles, whether they are thrombotic piles or simple skin tags, is advocated; 2 per cent. novocain is advised for the anæsthetic solution. In the injection of internal piles Dr. Goldbacher considers 5 per cent. phenol in vegetable oil to be superior to 5 per cent. quinine-urea, or the old stronger solutions in glycerin and water; he describes the technique of this method adequately and illustrates an adjustable needle of his own invention. The approved point for the insertion of the needle into the submucosa at the upper end of the pile is clearly shown, and Fig. 27 should make this position quite clear to those who are not familiar with the technique. The amount of solution injected varies according to the size of the pile, and should be sufficient to cause the tissue to swell and become blanched; the author believes on the whole in giving large doses, varying from ½ to 10 c.cm. He never injects a prolapsed pile until it has been returned into the rectum. The two names usually associated with this treatment, Albright and Blanchard, do not appear in the references relating to injection treatment.

In the section on pruritus ani the author draws attention to the views of Hanes and of Albright; these observers found, in cases of chronic pruritus ani, evidence of subtegumentary channels and tissue spaces containing irritating fluid beneath the perianal skin. Hanes suggested injection of dilute hydrochloric acid into these spaces to inhibit bacterial growth, and Blanchard advised making incisions for drainage purposes through the perianal skin. Dr. Goldbacher here describes a novel use of the 5 per cent. phenol in oil solution in those patients who fail to respond to simple local treatment. He has injected the solution subcutaneously through the perianal skin about ½ inch external to the anus to a depth of about ¾ inch; 5 to 10 c.cm. are injected at each session and at the same time, if relaxed mucous membrane is found in the rectum, this is treated by injection in the usual way. The rationale of this method is to obliterate tissue spaces and channels by the sclerosing effect of the solution, and in 17 cases reported the results have certainly been extremely good.

This book gives a very clear and accurate account of the modern injection treatment, and the author's adaptation of it to cases of severe pruritus ani is most interesting. The method is worthy of further trial and report.

DEMONSTRATIONS OF PHYSICAL SIGNS IN CLINICAL SURGERY.

Second edition. By HAMILTON BAILEY, F.R.C.S., Surgeon, Dudley Road Hospital, Birmingham. Bristol: John Wright and Sons, Ltd. 1930. Pp. 268. 21s.

THIS excellent book has been enlarged. Many new pictures have been added, and they are of the high standard of the rest. Mr. Bailey must be congratulated on the production of a work which gives just that assistance which is needed by the medical student attending his first clinics. It has won deserved popularity, and we predict for it a long and successful life.

OUTLINES OF BIOCHEMISTRY.

By ROSS AIKEN GORTNER, Professor of Agricultural Biochemistry in the University of Minnesota. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Limited. 1929. Pp. 793. 30*s*.

THIS book is based on a course of lectures delivered to students by more than one person, and in this way it gives an extremely good all-round description of the uses of biochemistry. It is not meant to be a handbook of biochemical compounds containing a detailed description of their properties, but is intended to give students an insight into the rôles which organic and physical chemistry play in living processes. As the author believes that "much of the vital energy can in the last analysis be traced back to energies characteristic of surface films and interfaces," he starts the book with a detailed consideration of the colloid systems. In this section he considers the colloids from every point of view and leaves the student with a thorough knowledge of their preparation, characteristics, and importance in biology. Proteins are dealt with in the next section, and a clear and full account is given of their properties and biological reactions. He goes on to treat the carbohydrates and fats. We commend the book to all students interested in biological phenomena. No unnecessary details are given, and the reader will find the work full of interest.

ANÆSTHESIA AND ANÆSTHETICS.

By F. S. ROOD, M.B., and H. N. WEBBER, M.R.C.S., L.R.C.P. London: Cassell and Co. 1930. With 60 illustrations. Pp. 292. 14*s*.

THIS book is distinguished from similar works by the fact that its authors do not attempt a complete exposition of the practice of anæsthetics but limit themselves to the methods in vogue at their own hospital. The result is that although there are omissions which may be regarded by some as important, yet the teaching is clear and positive and good reasons are advanced for the preferences shown. As the hospital where the authors work is University College Hospital we need not say that their attitude towards their subject is admirably scientific and up to date. This is nowhere better shown than in the excellent chapter on respiratory aspects of anæsthesia. The discussion here of the parts played by oxygen and by carbon dioxide, and the explanation of "asphyxial" danger in intratracheal administration even in the presence of plenty of oxygen, are admirable. The authors approve of wide use of oxygen with anæsthetics and still more of the employment of carbon dioxide during induction and for rapidly getting rid of the anæsthetic after operation. Their dosage of the latter gas, however, appears to us excessive; we do not believe the 20 to 30 per cent. in oxygen should be the usual strength, but that a much lower percentage gives the necessary respiratory stimulus with safety.

Although the authors lay due stress on the proper selection of drugs and methods according to the circumstances of each particular case, they naturally have what may be regarded as their routine method. This is open ether conducted in a particular fashion, which involves heroic employment of CO_2, of coverings of the mask and large doses of ether. The method must, we imagine, be extraordinarily unpleasant for the patient but we do not doubt its rapid efficiency. Those who employ closed methods, which are little approved of and but poorly described in this book, will, of course, institute comparisons unfavourable to this open induction as compared with that obtained by gas and ether, or ethylchloride and ether, with a Clover's inhaler. When reference is made to the latter instrument, we are surprised to see that it is the old narrow bore type that is referred to. In describing preliminary medication the authors point out the disadvantages which may be associated with the use of morphia in increased vomiting afterwards and muscular rigidity during operation. Generally speaking, however, they appear to favour the use of this drug. They do not give any space to the paraldehyde method and presumably disapprove of it; avertin is not unfavourably mentioned in a footnote.

The portions of the book dealing with local anæsthesia are better than is usual in a book of this size and the authors believe in an increased employment of these methods in the future. They believe that the injection of anæsthetics should be left to the anæsthetist, not to the surgeon. This is a moot point, but the course recommended in this book would undoubtedly be the right one if the authors' idea of a constant "team" could always be made practicable in surgical work. We notice that in connexion with spinal anæsthesia no stress is laid on what many consider important—viz., the maintenance of a position with the patient's head low for some time after the return to bed. We have indicated that there are features of this book, both of omission and commission, which many will find provocative, but we have read it with greater interest than that usually aroused by similar works. It is excellently written and produced, and whether it is an adequate guide or not for the inexperienced, certainly every anæsthetist should read it carefully.

BOOKS FOR NURSES.

Lectures to Nurses. By MARGARET S. RIDDELL, A.R.R.C., S.R.N., Matron, St. Mary's Hospital, Hampton; late Sister Tutor, Queen Mary's Hospital, Carshalton. London: The Scientific Press. Pp. 518. 6*s*.

A THIRD edition of this book contains new sections on surgical tuberculosis, special operations, and new growths. A good technical glossary has been added, which with the enlarged index will be a help to the busy nurse. Probably the most valuable addition is that dealing with the nursing of special operations; nurses who are working independently will be glad to refer occasionally to routine methods of post-operative nursing. The book is arranged in three series of ten lectures, intended for first, second, and third year probationers. Most lecturers would prefer to provide instruction on asepsis and antisepsis at an earlier stage in the course than the third year, since the nurse will have to work on both these principles from the outset of her career. But a book which is drawn up from practical experience, and insists on the importance of careful attention to small detail, gives the kind of teaching which nurses should find valuable in practice as well as in theory.

Surgical Nursing. By E. L. ELIASON, A.B., M.D., Sc.D., F.A.C.S., Surgeon, University of Pennsylvania; L. KRAEER FERGUSON, A.B., M.D., Agnew Fellow in Surgery at the University; and ELIZABETH K. LEWIS, R.N., formerly Chief Instructress of Nurses, Training School for Nurses of the University. London: J. B. Lippincott Company. 1930. Pp. 566. 12*s*. 6*d*.

THE nursing of patients after operations is as much a part of surgical craft as the operation itself. It is strange therefore that there are not more text-books on the subject. Good nurses seldom seem to record the many valuable observations they have made, and surgeons who write have not the intimate knowledge possessed by the nurses. The plan adopted in this book of the collaboration of two surgeons with a nursing sister is sound in principle. The authors have produced a satisfactory book in which they give good general advice and a clear account of the conduct of sick room nursing, as well as of the physiological and pathological facts upon which it is based. A fair example of the instruction given is the following. "Any surgeon is willing to tell a nurse at least once the type, length, and strength of the suture material he wishes to use, but there is one thing he should never be called upon to tell a nurse

to do, and that is to always test the strength of a suture or ligature before giving it to the operator."

In what concerns the surgeon directly in the operating room the book is excellent; where it falls short is in definite detailed instructions about many of the procedures the nurse is told to carry out. To inform her that all knives "should be tested after use to determine whether or not they require sharpening" without describing a technique to gauge the keenness of a knife-edge is not much help. Detailed instructions how to make enemata are wanting. Four ounces of glycerin recommended on page 86 is rather excessive in amount, and two pints for a small enema makes the reader wonder what the volume of a large enema amounts to. The method of proctoclysis described on page 47 is not Murphy's method, and is unsatisfactory in practice. These are only small points which can easily be remedied in subsequent editions. How much to tell the nurse and what to withhold is always a problem to those concerned in her education. The authors have successfully surmounted the difficulties in this book, for it should be quite intelligible to those who have had but little training in the preliminary medical sciences. Moreover, it is well illustrated and cheap.

NATIONAL HEALTH INSURANCE.

Removal of Practitioner's Name from Medical List.

Following the report of the usual Inquiry Committee upon a reference under Part VI. of the Medical Benefit Regulations, the Minister of Health has decided to remove the name of a medical practitioner from the Medical List of the Lancashire Insurance Committee, and has directed that the practitioner shall pay £20 towards the costs. The charges were twofold. An insured person on the respondent's list had suffered a severe injury to his hand while employed on a trawler; after a few weeks in hospital the man was attended by the respondent for some months. He used to come to the respondent weekly to obtain a certificate of incapacity for presentation to his employers, and during these visits there was conversation as to his prospects of success in a claim under the Workmen's Compensation Act. In respect of each certificate the practitioner was paid at the rate of 1s.; he subsequently made a charge of £2 for advice given on these occasions, and, on payment being made, he gave a receipt for "the sum of £2 for medico-legal advices given weekly every Friday since 31st August to and including 15th Feb., 1929." The Inquiry Committee did not regard this as a fee or remuneration for "treatment" outside the scope of the practitioner's terms of service under the National Health Insurance Act, but the Committee expressed itself strongly in condemnation of the respondent's breach of the general standard of professional conduct. The respondent pleaded that, as a person with considerable knowledge of workmen's compensation cases, he was so much oppressed by the unasked confidences of his patients that he felt obliged to protect himself by making a professional charge. The Inquiry Committee points out that he could have put a stop to these conversations by advising the patient to consult a solicitor or by merely declining to continue the discussion. "It appears to us," says the Committee's report, "little short of contemptible that an uneducated patient . . . should be permitted without warning to continue conversations or discussions as to the prospects of his claim when in fact the doctor is all along intending to regard his own remarks, not as views given in pursuance of the ordinary dictates of kindness to an insured person, but as 'medico-legal advices' given over a period at the end of which an alleged professional charge, not measured by any recognised standard, is to be made. Although, technically speaking, this charge, may not have been proved, we desire to submit our strongest disapproval of the respondent's conduct." With this censure the medical profession will probably agree; if such charges became an accepted practice, the legal profession might be tempted to retaliate by giving its clients "medico-legal advices" on matters at present dealt with by physicians and surgeons.

The other charge was an alleged breach of Clause 10 of the terms of service—namely, that the practitioner had demanded and accepted a fee of five guineas from a patient on his medical list in respect of a service rendered to her. The patient was a married woman who had undergone the Cæsarean operation for childbirth in 1923, and had since suffered from anæmia and some irregularity in menstruation. She complained to the respondent of feeling pain in sexual relations, and he suggested some kind of operation. Without indicating its nature he explained that it did not fall within the range of services ordinarily rendered by an insurance doctor, that the fee would be five guineas, and that if she went to hospital the cost would be higher; he offered some comment upon the publicity attendant on the routine of such a matter if treated as between panel patient and insurance doctor. The woman then expressed a wish to be treated as a private patient, and her mother paid the fee. There was a dispute as to what actually occurred on her visit to the practitioner's surgery which, according to his evidence, did not occupy more than 25 minutes. The respondent described the symptoms he observed and the operations he performed. The patient gave her own account and Dr. William F. Shaw, professor of gynæcology in the Manchester University, also gave evidence. Dr. Shaw criticised the respondent's version, regarding it as practically impossible that the observations and acts could have occurred within the period named, pointing out also the absence of preparation of the patient for such an operation or series of operations, the absence of certain symptoms which the respondent had named, and the non-existence in medical practice of a condition described as adhesion of the clitoris, which the respondent said he had observed. The Inquiry Committee considered it possible that some of the manual acts deposed to by the respondent had in fact occurred, but could not accept his account of the observations and operations as accurate. The respondent did not contend that he had not broken the terms of service in respect of the procedure prescribed for treatment not within the range of medical service for which a fee may be charged. He said he had explained to the patient that he would have to fill up form G.P. 45 for the Insurance Committee's information, but that she pressed that this should not be done, and he therefore considered the conditions extenuating, and omitted to fill up the form in order to avoid publicity. He said his breach of the regulations was merely technical: the Inquiry Committee, however, did not accept this suggestion. The report refrains from deciding whether the treatment administered was or was not within the range of medical service, but regards the practitioner's conduct as open to criticism in not obeying Clause 9 (1) of the terms of service, and fails to understand why the procedure laid down in Clause 10 (2), if properly carried out, need have caused embarrassment to the patient. His explanation of the position to the patient, "if not actually misleading, was of a character likely to induce her unnecessarily to fall in with a proposal which involved the payment of a fee." It was an additional allegation against him that, if any operation was performed on the patient, it could only have been a minor operation, and that the operation he claimed to have performed could not possibly have been carried out. As to this the report explains the difficulty of ascertaining exactly what did take place; the allegation involves issues as to the respondent's skill and capacity as a medical practitioner (with which the Inquiry Committee is not competent to deal) and as to his credit. Accepting the patient's version of the visit rather than the respondent's, the Inquiry Committee regards his conduct as "open to grave criticism in requiring this fee for the services in fact rendered."

THE LANCET.

LONDON: SATURDAY, MARCH 22, 1930.

POISONS AND PHARMACY REFORM.

WITHOUT undue haste the Departmental Committee on the Poisons and Pharmacy Acts, appointed nearly four years ago, has produced its report (Cmd. 3512: 1*s.* 6*d.*) It examined a representative selection of departmental, scientific, professional, and commercial witnesses. The hand of one of its members, the Senior Parliamentary Counsel, may doubtless be traced in the draft Bill appended to the report. Unfortunately, even if the proposals made a popular appeal and received an enthusiastic welcome, there is but the remotest prospect that legislation could be attempted for a long time. One perhaps inevitable proposal involves departmental changes. The Privy Council, that venerable body which has had to surrender many administrative functions to upstart Ministries, is now asked to hand over poisons too. The Home Office, already concerned directly with dangerous drugs and indirectly with the prevention and detection of crime, has a well-nigh incontrovertible claim; the Home Secretary is to be assisted by an advisory "Poisons Board" similar in structure to the advisory body set up by the Therapeutic Substances Act of 1925. The Committee endeavours to separate pharmacy from poisons. The first part of the draft Bill deals with pharmacy and begins by defining membership of the Pharmaceutical Society. Membership is to depend on registration, not on election; a member will be removed from the register by a disciplinary "Statutory Committee" of the Society on his conviction of an offence against the Pharmacy Acts or of any other criminal offence or for any misconduct which in that committee's opinion unfits him to be on the register. It will be noted that the phrase "infamous conduct" is avoided and that there is to be a right of appeal to the High Court. Business premises where drugs are sold retail are to be registered in accordance with by-laws made by the Society. Sale of poisons on unregistered premises will be an offence against the second part of the Act—i.e., the part dealing with poisons. The improper use of professional titles is next dealt with. Unless registered as a pharmaceutical chemist no one is to use the title of pharmaceutical chemist or pharmaceutist; unless registered as a pharmacist no one is to use the title of chemist and druggist, druggist, pharmacist or "in connexion with the sale of goods by retail" chemist. The Pharmacy Act of 1868 forbids an unregistered person to call himself a chemist—even if he is a member of the Institute of Chemists; it will be seen that the draft Bill confines the prohibition to "chemists" selling goods by retail. There was a suggestion that the title "chemist" might be abolished as a description of the registered pharmacist, but the Committee rejected this as contrary to popular usage and a possible source of expense in the alteration of existing shop signs. The Bill contains a clause controlling corporations carrying on business (they must have qualified superintendents and managers), and another regulating business carried on by the representatives of a deceased pharmacist. These clauses complete the three proposed classes of "authorised seller of poisons"—namely (1) the registered pharmacist, (2) the corporation, and (3) the executor, administrator or trustee of a deceased registered pharmacist, provided that in all three cases the prescribed conditions are complied with.

We now turn to the poisons provisions in the second part of the Bill. Amongst other proposed repeals the Arsenic Act of 1851 (described as "practically obsolete") is to go. The Poisons Board, already mentioned, is to frame and submit to the Home Secretary a Poisons List which is to be divided into two parts. Part I. of the list will contain the poisons which may not be sold retail except by "authorised sellers of poison." Part II. of the list is intended, it seems, to cover poisons of the sheep-dip and weed-killer type at present governed by Section 2 of the Act of 1908. The Committee refrains from recommending whether a particular substance should or should not be placed in the list. Naturally, comment is restricted until some outline of the contents of the two divisions of the Poisons List is available. Persons other than "authorised sellers of poisons" will be allowed to sell Part II. poisons if they obtain a licence from the local authority. No poison in either Part of the Poisons List is to be sold unless the container label gives the name of the poison, the proportion of poison to total ingredients, the word "poison" (or other prescribed indication), and the name and address of the seller. No poison in Part I. is to be sold unless the purchaser is either certified in writing or is known to the seller, and unless the seller, before delivery, enters in a book the date, the name and address of the purchaser and certifier, the name and quantity of the article sold, and the purpose for which it is required, the purchaser signing the entry. But these restrictions will not apply to medicine supplied professionally by a registered medical practitioner, dentist, or veterinary surgeon, or to medicine dispensed by, or poison in a medicine supplied by, an "authorised seller of poisons," though here again there are further precautions as to labelling and the making of entries. The Bill is not to apply to the sale of poisons by way of wholesale dealing or for export, or to sale for use in a hospital, dispensary or approved institution, or to sale for research purposes. The Pharmaceutical Society is given ample authority of inspection, which at present it does not possess. Wide powers of rule-making are delegated to the Home Office, as critics of bureaucracy will doubtless point out. The Report furnishes clear reasons for its proposals, succinctly states the existing difficulties, and deserves close attention.

Interpreting its terms of reference somewhat rigidly, the Committee avoids the topic of the Dangerous Drugs Acts. It refuses to rove at large over matters unconnected with poisons, such as the general supervision of the dispensing of medicine or the attempted definition of the business of a pharmacist. Some of these omissions give Mr. F. W. GAMBLE cause to contribute a vigorously worded Minority Report. He urges that the work for which pharmacists are so carefully and specially trained should be reserved to them. The rules which are applied to the dispensing and storage of poisons in chemists' shops he would like to see extended to the handling of poisons in hospital dispensaries and doctors' surgeries, where, he says, the handling is often by unqualified persons. He dislikes the constitution of the Poisons Board and the excessive

delegation of rule-making power. He thinks the proposed legislation will unduly limit the poisons in Part I. of the list and unduly enlarge the poisons in Part II. He objects to the ease with which unqualified persons will obtain a local authority's licence to sell Part II. poisons; licences, he predicts, will be refused only to criminals or lunatics. Unlimited opportunities will thus exist for the purchase of arsenic and nicotine preparations, to say nothing of lysol and hydrochloric acid, both of which, he says, are responsible for a large number of fatalities. It will be possible, he assumes, to purchase more freely than ever enough arsenical weed-killer to exterminate a village, but it will still be impossible to obtain the smallest dose of heroin for a cough without a prescription. Mr. GAMBLE'S lively criticisms indicate the kind of attack to which the draft Bill will be exposed. The medical profession will have its own points to press. The Committee received a strong protest against the harassing and unnecessary provision in Section 3 of the Dangerous Drugs and Poisons (Amendment) Act of 1923, which requires "an order in writing signed by the purchaser" from a doctor purchasing poison. This, says the Report, will be a point for the rule-making authority to consider. It is to be hoped that the Home Office will consider it more favourably than in 1923.

UROBILINURIA.

DURING the 60 years since the first detection of urobilin by Jaffé, an extensive literature has arisen both upon its chemical composition and origin and upon its clinical significance. The test for this substance and its precursor urobilinogen in the urine has been used more on the continent than in this country. A recent contribution to the literature of the subject is a small monograph by OLAF BANG,[1] of Oslo, who gives an admirable summary of present-day views upon this subject, with notes on some useful original work.

It is generally agreed by observers that the formation of urobilin depends upon both intestinal and upon liver functions, since it is essentially formed in the intestine from the bilirubin secreted in the bile; after reabsorption from the intestine the urobilin is mostly disposed of by the liver, a small portion only escaping in the fæces in the form of stercobilin. Incidentally, there is no certain evidence that urobilin can be formed under any circumstances by the general tissues of the body, and it is thus some index both of the amount of blood destruction which is occurring, and of the functional efficiency of the liver as a whole. An excretion of urobilin in excess of the normal is generally regarded as a general expression of liver damage, but there is no agreement as yet on the limits of the normal. Different tests suggest different answers to this problem. BANG uses a modification of Schlesinger's original reaction, whereby fluorescence is produced in urine containing urobilin when zinc salts are added to it; the modification is that of Marcussen and Hansen, and consists in dissolving 1 gramme of powdered zinc acetate in 10 c.cm. of 96 per cent. alcohol; 10 c.cm. of weakly acidified urine are added, and one to two drops of 5 per cent. tincture of iodine; the mixture is shaken and filtered, and the maximum fluorescence occurs after 20–30 minutes standing if urobilin is present. With varying dilutions of urine and careful standardisation of the illumination BANG has found that this reaction gives a fairly accurately quantitative estimation, provided a few simple precautions are observed. Working with this test he has confirmed the findings of other recent observers that a slight urobilinuria is a constant normal finding. There is, however, a simpler clinical test. A red colour is produced when Ehrlich's aldehyde reagent is added to a urobilinogen-containing urine, and when this method is used most observers agree that more than the faintest traces are probably always abnormal. The Schlesinger reaction is the more delicate, and according to BANG, the results in a large number of cases indicate that the boundary between normal and pathological urobilinuria is probably a variable one, and that there is constantly a normal slight excess excretion in the periods following the taking of food. The normal excretion is high in the new-born, possibly of maternal origin, falls later to a minimum, and then shows a small but perfectly definite increase with increasing age.

In healthy men a pathological urobilinuria, which BANG regards as evidence of at least a temporary liver insufficiency, can be produced in various ways. One way is the artificial production of an alkalosis by high bicarbonate medication (controlled by BANG by estimations of the blood alkaline reserve), and the taking of a carbohydrate-poor or carbohydrate-free diet; such pathological "dietetic" urobilinuria may be observed for example in patients undergoing treatment of peptic ulcer, in states of hunger, and in some depressive mental states. In diabetes mellitus the cause can be traced to lack of carbohydrates and to associated liver defect. The beneficial effect of sugar upon a damaged liver is, of course, well known, and in calling attention to the effect of carbohydrate shortage upon liver efficiency, BANG has emphasised a point of some importance. In the diabetics under his observation, a pathological urobilinuria was present in almost all those in whom the sugar metabolism was at all seriously upset, and was a constant feature in 23 patients who were all taking a diet very restricted in carbohydrates; in four untreated diabetics on full diet no pathological urobilinuria was found until a strict diabetic diet was ordered. These results have convinced BANG that undue restriction of sugar in diabetes may do further damage to a liver whose function may already be defective, and that a diet should be given containing sufficient carbohydrate to abolish any abnormal urobilinuria. It seems that the *utilisation* of some 60 g. of sugar per diem is the approximate figure below which pathological urobilinuria is likely to occur; a higher amount than this may possibly act as a protection to the liver against the toxins to which diabetic patients appear to be particularly vulnerable. BANG is thus in accord with those who are against the reduction of the carbohydrate diet to a minimum in diabetes, because of the paramount importance of maintaining the functional efficiency of the liver.

[1] Klinische Urobilinstudien in Sonderheit an normalen und "lebergesunden" Personen. Die Wirkung kohlehydratknapper Kost auf die Urobilinausscheidung. Die Urobilinurie der Diabetiker. Acta med. Scand., 1929 (Supp. xxix.).

SHOULD MEDICINE BE A MENDICANT?

THE day when the voluntary hospitals offered little beyond food and shelter to the sick poor is long past: since they grew to be institutions where sick persons are treated—and even on occasion healed—much of the virtue has gone out of their position as objects of charity. Such at least is the opinion of Prof. E. W. HEY GROVES, who, in delivering on March 13th the Harveian lecture at the Harveian Society of London,

spoke with considerable distaste of the proficiency in the art of begging to which the voluntary hospitals had attained of late years. Never had donations to hospitals been so lavish, and yet all the large voluntary hospitals were in debt, depending on "maudlin advertisement and the undignified clowning of students in the streets" to keep them open. He described the methods used as mendicancy, but by the end of his enumeration they had assumed the proportions of highway robbery. That students do not consider a hospital collection to derogate from their dignity, and that the public is placidly amenable to this financial bludgeoning he thinks beside the point. Certainly there is no escaping from the fact that the present system leads to duplication of expensive apparatus in all the large hospitals, and that the demands of scientific medicine for elaborate equipment increase yearly. This is responsible for the enormous expenditure; the requirements of a well-organised hospital have reached a complexity which it is beyond the powers of philanthropy to satisfy, and the testimony of failure lies in the long lists of those awaiting treatment. Even a patient with malignant disease may wait months for a bed, while a man with a comparatively trivial disability will be kept from his work for an indefinite period, costing the public unnecessary sums for his maintenance. Already hospitals have to be provided by the State for classes of ailment which cannot be accommodated by the voluntary hospitals, such as fevers, mental and venereal diseases.

In the past, said Mr. HEY GROVES the poor-law hospitals had not pretended to compete with the voluntary hospitals, either in equipment or staff. Under the new Local Government Act the London County Council would no doubt bring the equipment of certain hospitals up to date, but that would not in itself be sufficient to bring them into line with the voluntary hospitals unless their staffs were correspondingly augmented. The treatment of a consultant on the staff of a general hospital at the present time amounted, he said, to exploitation; the hospital consultant was attending the working men and women of one of the richest countries in the world, many of whom were drawn from the middle classes and who paid for their maintenance in hospital. The expenses of a large number of patients were paid by insurance companies, and the only person who remained unpaid was the doctor. The chief argument urged against nationalisation of hospitals was that the doctors would require to be paid; the national insurance scheme produced a large surplus every year which might well be employed to defray the cost of hospital attendances, but this would mean that the doctors would receive fees. Is this a waste of money? The man who wished to become a consultant, said the lecturer, unless he had private means, must struggle during his best years to acquire a competence, so that by the time he was successfully established he had lost the taste for research. There is, of course, another aspect of voluntary medical service, and it would be idle to pretend it is quite as quixotic as it sounds, but it is certainly true that the average consultant spends a large part of his working time at a hospital, and there is no real reason why he should go unpaid for it.

Mr. HEY GROVES did not content himself with criticism of the position as it stands; he had a constructive policy to suggest.[1] By arranging for payment by all patients, except the destitute, according to their means, the cost of apparatus and maintenance could be covered, and fees could be paid to the physicians and surgeons attending the cases. The cost of new buildings and extension of accommodation should be met by a State subsidy, without State control. A central governing body should be formed to coördinate the work of the voluntary and municipal hospitals in order to prevent duplication of apparatus, and to organise the greatest mass efficiency with the least possible expenditure. The cottage hospitals, particularly, should be affiliated to some larger hospital, so that operations and treatment beyond their capacities would never have to be undertaken by general practitioners in outlying districts. All this could be accomplished by an extension of the insurance system, and a demand for reform should come first from the medical profession. But nothing, he concluded, could be done until the sentimental idea of the voluntary system had been abandoned—an idea so false that the very name was ironical.

[1] See also THE LANCET, 1928, i., 251.

AN APPEAL TO THE WHOLE PROFESSION.

THE work of the Royal Medical Benevolent Fund is, or should be, the urgent concern of the whole medical profession. A certain number of practitioners in their old age, through broken health or ill-fortune, find themselves in desperate circumstances with no one to whom they can appeal for help. It is for their assistance that the Fund exists, and the descriptions published by the committee of some of the cases relieved give the measure of its value. In the annual report for 1929, which was mentioned on page 603 of our last issue, reference is made to the strong feeling of the committee that appeals should not be made to the general public. The altruism with which the medical profession is usually credited should be sufficient to make distress among its own members an impossibility. The Fund also extends help to widows of medical men, and daughters who in later years find themselves without means of support; on the death of a practitioner assistance in the education of his young children is sometimes granted, and efforts are made to secure work for them later. Unfortunately, though the income of the grant department for 1929 shows an increase of more than £600 over that of the previous year, the funds available are still too low to make complete relief possible, even in cases where it is most urgently needed. Annuities are given only to the most needy, when there is no possibility of their affairs mending; grants are voted for a period of one year, and paid quarterly. All cases are investigated carefully, to assure the committee of genuine distress, before a grant is made, and subscribers and non-subscribers are assisted equally. The highest annuity which can be given at present is £10 per annum, which is often quite inadequate. A subscription of one guinea a year from every practitioner would make it possible to give sufficient help to all cases. Another suggestion, which should meet with a ready response, is that in case of personal illness the practitioner should send a cheque to the Fund in recognition of the services he has received from a colleague. Subscriptions are urgently needed, and those who are already subscribers can do a service by persuading others to contribute; personal appeals are likely to meet with a better response than printed ones. Subscriptions may be sent to the Honorary Treasurer of the Fund at 11, Chandos-street, London, W. 1.

Annotations.

"Ne quid nimis."

TO PREVENT DIPHTHERIA.

THE prevalence of diphtheria in a severe form is giving cause for anxiety in some of the large urban areas in the West of England, and their medical officers are urging on the civic authorities their duty to protect the children from attack. Those whose chief preoccupation is preventive medicine are watching with sympathetic interest to see what measure of success may follow the campaign in New York to attain the goal "no more diphtheria after 1931." The enthusiast will read with envy in the Health Department's weekly bulletin of the electric night sign 200 by 40 feet, urging the parent to bring his children for immunisation, the motor-vans with staff to carry on injection in public places, and the 211,000 inoculations from the 100 stations in the city reported for 1929, 62,000 of which, by the way, were given by private practitioners to their patients. Berlin, also, startled by the high incidence and mortality of diphtheria some three years ago, has taken up immunisation, with the energetic support of the Ministry of Health. Prof. E. Seligmann [1] estimated that about 100,000 inoculations with toxin-antitoxin mixture or floccules had been done in Berlin. Of the 600,000 children aged 0 to 15 years, the figures available showed that some 88,000 had received one injection and 65,000 two injections. The firm issuing the floccules in the early part of the work had recommended one injection only, but the Ministry insisted that two were necessary, and in the final conclusions the author recommends three at fortnightly intervals. Of 31,000 children tested before immunisation, 78 per cent. were positive to the Schick test—a strikingly high figure for a city population. Of 11,000 children tested six weeks or more after inoculation with toxin-antitoxin mixture or floccules, 71 per cent. had become Schick negative. Prof. Seligmann concludes that while W. H. Park in New York found the incidence of notified diphtheria amongst 90,000 immunised children to be one-quarter of that amongst other children, the Berlin figures, so far as they go, show a reduction to one-third. Of 65,000 who were immunised, 0·27 per cent. became ill, while of the general child population the rate was between 0·75 and 0·96 per cent. Dr. J. F. C. Haslam [2] in his salutary tilt at exaggerated promises made for new methods, is possibly a little hard on the reformer, and questions the justification for the advocacy of wholesale immunisation. Perhaps it is essential for the success of the reformer that his views of the future should be somewhat more rose-hued than prosaic reality immediately justifies.

It is admittedly difficult to produce evidence, impregnable to the statistician, that wholesale immunisation will abolish a given disease—in this instance diphtheria—from a large city, but considerable evidence is available which suggests that time, after all, may here justify the enthusiast. W. H. Park, in 1927, examined 150 successive notifications of diphtheria. Only three of the children had had prophylactic, one of them almost certainly did not have diphtheria, one of them had received but two injections, and in none of the three instances had three months elapsed which Park considers usually necessary for the development of immunity. It is true that very mild diphtheria, or as it has been called "tonsillitis in a diphtheria carrier" may occur in people who are Schick negative. The most recent record is that of Lesné and Launay working in Paris amongst children immunised with anatoxin. Dr. Haslam agrees that there is scope for the protective inoculation of children when diphtheria is occurring in the district; he thus comforts the harassed medical officer of health faced with persistent sporadic cases of diphtheria in his area. The success of active immunisation in schools and other institutions in which diphtheria has occurred, and amongst nursing staffs specially exposed to infection he accepts as unquestioned; in time of epidemic, control based primarily on Schick testing and secondly on swabbing can quickly be established. Fortunately, immunisation to-day can be regarded as a safe procedure in the British Commonwealth where the non-poisonous toxoid, with or without antitoxin, is now almost exclusively used. Had the precautions observed generally to-day and pleaded for by Prof. A. Bessemans [3] in Belgium (where even now there is no official control of materials for Schick testing or active immunisation) been in force, the world would have been spared some of the earlier accidents. This author refers to the liability of anatoxin to cause reactions, and gives also a deeply interesting account of the illness and death of two children, one in 1922, the second in 1928, who had apparently been given toxin, instead of prophylactic, through a tragic mistake. The prominent features were—as one would have expected—local pain between three hours to two days after the immunisation, becoming severe and persistent as the swelling spread widely over adjacent parts of the body, with a general feeling of illness. Had the significance of the local swelling and pain with transient fever been recognised earlier, probably both children could have been saved with antitoxin. In the Austrian series the same intense local pain was noted with a violent inflammatory process rapidly spreading. Increased experience of these methods of immunisation gives us more accurate knowledge of their proper control and their application in preventive medicine.

[1] Deut. med. Woch., 1929, lv., 1117.

[2] Recent Advances in Preventive Medicine, London, 1930, p. 294.

INSURANCE AGAINST MISTAKEN DIAGNOSIS.

IT is a brave physician who fills in the diagnosis on the case-sheet at his first hospital round, and there is no occasion for him to do so except to show the attitude of intellectual honesty and infallibility which gets a hold on students as nothing else does. But the practitioner is compelled to make an immediate diagnosis, in the interest both of the patient's treatment and of the relatives' safety, in every case of infectious disease which he meets in his daily round. It is then his duty to make a provisional diagnosis which may have to be revised in the light of further developments, and the general public calls a provisional diagnosis of this kind a *mistaken* diagnosis. If the child has been taken away from home with scarlatina he or she has got to go through with it. Such mistaken diagnoses—no medical man need be sensitive about the term—are common in the experience of fever hospitals. In the year 1928 for example, among the 36,800 cases admitted to the hospitals of the Metropolitan Asylums Board in 4525 of them the diagnosis was corrected after admission. There were 1519 diagnoses of scarlet fever with which the M.A.B. doctor was unable to agree, and in 323 cases in which this diagnosis was confirmed some other infectious disease was also present. Thus in one year a single disease offered an opportunity for ill-informed protest on the part of more than 1800 heads of families. Against litigation of this kind protection may fairly be sought. The Health Committee of the Stoke Newington Borough Council has lately had its attention called by the Metropolitan Branch of the Society of Medical Officers of Health to the fact that practitioners are more frequently calling upon medical officers of health to say whether or not a patient is suffering from infectious disease, particularly small-pox, and that it is beyond human control to prevent occasional mistakes even after the most

[3] Rev. Belge des Sci. Méd., 1929, i., 597.

careful examination. The Society suggested that councils should consider the question of insuring themselves and their medical officers against liabilities resulting from mistaken diagnosis. This course the Stoke Newington Committee decided to recommend to the council, after ascertaining that some other borough councils had already accepted offers from insurance companies to cover the risk for a premium of £15 per annum—the limit for any one claim being £5000. Damages, it is believed, can only be substantiated where negligence on the part of a medical officer is actually proved. The policy is to cover the council, the medical officer of health, and any doctor authorised to act on his behalf in connexion with the diagnosis of infectious diseases, against any claims in respect of erroneous diagnoses the terms of such policy to be acceptable to the chairman of the health committee. It may seem to some of our readers that protection of this kind is duplicating the machinery of existing medical defence societies, but it should be noted that the new policies relate to both the council and its medical officer, and those with most experience are well aware that responsibility in a case of mistaken diagnosis is often a very debatable point. Whilst the medical officer may be fully protected against any claim made against him on the ground of alleged personal negligence, it is possible that cases might arise where the question of responsibility is debatable, and where the additional protection afforded by the policies which the borough councils are now taking out would stand him in good stead. Moreover, action might conceivably be taken against the council and its medical officer jointly. On the other hand, no medical officer should rely for his safety on these new policies, for their scope is limited. The protection afforded is only in respect of erroneous diagnosis and does not exceed £5000.

THE MOTILITY OF SPERMATOZOA AS A TEST OF FERTILITY.

FOR years the motility of the male sex cells has been regarded as the best criterion of male fertility, but Dr. Gerard L. Moench [1] thinks that the external factors which affect it are so numerous as to be misleading. Under apparently identical conditions specimens from the same person may show activity or inactivity, and it is only when absence of movement is consistently noted in repeated examination of absolutely fresh and uncontaminated semen that sterility can be diagnosed. Moench could find no relation between activity of movement and fertility. Some specimens of semen from men with normal breeding records contained actively motile sperms which remained alive 12, 24, and even 30 hours and more, whereas other samples from equally normal men contained only sluggishly motile cells which seemed to be nearly all dead after five or six hours. In order to test the various ways in which motility is affected experiments were made in diluting the semen with distilled water, salt solutions, and various dilutions of sodium bicarbonate, dextrose, and human blood-serum. In every case, with the exception of human blood-serum and 2–5 per cent. dextrose solution, motility was reduced by the diluent. In 5 per cent. dextrose motility of the sperms could be observed for more than 54 hours after emission. Light and gravity had no effect on motility, but changes of temperature caused much variation. Specimens which were kept cold retained their motility longer than those left at room temperature, probably because the sperms were more sluggish in the cold and used up their store of energy less rapidly. Moench found no verification for the statement that the vitality of sperms is lessened by age: those from old rabbits seem to have shown as much active movement as those taken from younger animals. Poor general health, on the other hand, had a definite effect, and he quotes a case in which an attack of influenza abolished motility for six months. He doubts whether it is true that spermatozoa with straight tails, even although stationary, have been alive at the time of ejaculation, and those with curled tails dead. He was able to produce the curled variety by adding three or four volumes of distilled water to a fresh specimen of semen, and therefore considers the curling up of the tail to be the result of chemical action. The deduction Moench makes from his experiments is that great caution must be exercised in drawing conclusions from slight changes observed in the motility of sperm cells.

It may be recalled [2] here that Prof. F. Unterberger reports that addition of bicarbonate of soda to the vaginal contents during coitus results in the cure of many cases of sterility and in the birth of male children.

[1] Jour. Amer. Med. Assoc., Feb. 15th, p. 478.

AN INCLUSIVE FEE AT A SPECIAL HOSPITAL.

THE secretary of the Royal Westminster Ophthalmic Hospital thinks it may interest your readers to know that it has been found possible to offer a private room in the hospital with central heating, hot and cold running water, light, maintenance, generous feeding (including tea supplied to patients' friends), and full nursing services, for an inclusive fee of six guineas a week. No extra charge is made for the use of the theatre, or for drugs or dressings. The bacteriologits's fee is half a guinea; that of a pathologist or radiographist, if required, is a guinea in each case. The surgeon's fee is a matter of arrangement between surgeon and patient and although the average fee is from ten to thirty-five guineas, according to the operation required, a staff surgeon has been known, he says, to accept as little as five guineas. No charge is made for the surgeon's assistant, and for the services of the hospital's medical officer a charge of only a guinea is made, even if the patient remains under treatment for a month. The rooms are fitted and furnished more in the style of a modern hotel than of a nursing home, and there is a special sitting room with wireless and other amusements, where patients who are up and about may meet each other if they wish to do so. In an extension of this system of private nursing, at moderate inclusive charges, in fully equipped hospitals, the secretary of the hospital sees the solution of a problem which lies heavy on the middle classes.

PROBLEMS OF SYPHILIS.

THE minds of clinicians and pathologists have long been exercised about the diagnostic value of positive reactions (Wassermann and its various modifications, flocculation and opacity tests) in the blood and spinal fluid of patients who have no clinical manifestation of syphilis. This was the subject of a symposium recently conducted by the *Vie Médicale*, Jan. 25th, 1930, and although the inquiry did not evoke a unanimous reply, the opinions of the experts concerned—most of them French—are not without interest. A somewhat similar problem, namely, the causation and treatment of Wassermann-fast syphilis, was discussed recently by the Medical Society for the Study of Venereal Diseases at a meeting reported in our issue of Feb. 8th (p. 298).

In the summary of the French symposium, Dr. P. E. Morhardt says that almost all are agreed that an isolated positive Wassermann reaction, in the absence of clinical signs, has scarcely any value, and that before a diagnosis of syphilis is made and appropriate treatment is given, several observations, all with undoubtedly positive results, are necessary. One writer, Clément Simon, is emphatic that no one should carry out delicate biological tests, such as the Wassermann without adequate training and without having mastered all the details of technique involved.

[2] See THE LANCET, March 1st, p. 475.

But, as we have pointed out,[1] even when the Wassermann test is carried out by identical methods, the results obtained in different laboratories may differ very considerably—in as many as 25 per cent. of the cases. E. Joltrain and O. Naegeli lay especial stress on the importance of making a thorough and careful examination of the patient and not relying solely on the pathological findings. With this we are in full agreement, although it must be admitted that sometimes clinical methods of investigation will fail to discover any objective sign of syphilis—in "latent inherited" syphilis, as well as in the acquired disease. If, besides a positive blood Wassermann reaction, a positive spinal fluid reaction is obtained, the diagnosis of syphilis is almost certain, and it is almost certainly also an active syphilis of the central nervous system which demands prolonged treatment. A. Marie calls a positive spinal fluid a "danger signal," which may be discovered quite early by systematic examination of the cerebro-spinal fluid, and which, if properly treated, may enable us to avert the very serious nervous system complications of the disease, to which the positive cerebro-spinal fluid shows the patient to be predisposed. This is of the utmost practical importance. Most of the replies expressed the view that a positive serological reaction—even in the absence of all clinical signs—calls for specific treatment, but that the actual method and details of treatment vary with the age of the patient. In the young, and especially in the pregnant woman (as H. Montlaur points out) a positive reaction should mean a prolonged and intensive course of treatment, aimed at making the reaction negative; whereas in elderly people—who, as S. Bergel says, have passed the age of syphilitic aortitis, general paralysis or tabes—treatment should be moderate and cautious. In considering the value of the serological tests in hereditary syphilis, Morhardt in his summary suggests that the Wassermann reaction of the blood is not of great value, but that more importance attaches to parental antecedents and to clinical signs in the patient. This brings into relief the great difference between the prevalent French view of the incidence of hereditary syphilis and that current in this and most other countries. In France a child born of syphilitic parents, if it suffers from epilepsy, debility, an unexplained anæmia, dystrophies, or almost any conceivable symptom, is commonly regarded as being the victim of hereditary syphilis, even though the serological reactions are persistently negative. The sequel is often a course of intensive treatment, and E. Joltrain utters a warning against such indiscriminate medication, since he has seen it do harm in children when applied without any valid reason. In this country nearly every syphilologist treats apparently healthy children in syphilitic families, who have no other sign or symptom of the disease than a positive Wassermann reaction, in an endeavour to make the blood reaction negative and to prevent trouble in the future. It must be admitted that the attempt to make the Wassermann negative in cases of hereditary syphilis is not always successful, but granting this, it is desirable to treat the patient by giving alternate full courses of arsenic, bismuth or mercury and iodides, without troubling too much about the blood test.

Lastly, there are the two conditions known as Wassermann-relapse and Wassermann-fastness. The former refers to a syphilitic in whom the reaction of the serum is rendered negative but subsequently becomes positive again. It is usually the result of inefficient treatment. Such patients if young and strong, require intensive and continuous treatment for two or three years with arsenic, bismuth, mercury and iodides; if they are elderly but apparently well, and the syphilis is of long standing, they should be treated with care, and preferably with intramuscular or subcutaneous injections of soluble salts of bismuth or mercury (L. Hudelo). Wassermann-fastness, on the other hand, implies that at no time during the course of the disease has the serum reaction been negative. Fortunately this condition is uncommon, and in spite of various explanations of its causation—such as the administration of the remedial agents (arsenic and bismuth or mercury) concurrently instead of alternately, or the giving too many or too strong injections whereby the reacting tissues are exhausted—its pathology is still undecided. No one is able to foretell at the outset of the treatment which patient will show the condition, and this reminds us once more that medicine is not and probably never will be an exact science, because it deals with bodies whose chemical and physical make-up differs. Treatment which is usually difficult, though occasionally a spontaneous reduction to a negative has been reported, is well summarised by Hudelo. In the case of old syphilitics, 50 to 60 years of age without clinical signs, and apparently in perfect health, it is unnecessary to persist in treatment; for these are essentially cases of benign syphilis, and there is no need to upset the equilibrium of the patients by exposing them to the real risks of an indefinite course so as to avoid the dangers, often exaggerated, of a Wassermann-fast condition (Ravaut). With younger patients the case is different and serum Wassermann-fastness is often a sign of involvement of the central nervous system (in hereditary as in acquired syphilis) leading eventually to tabes or general paralysis. These patients should be carefully watched and periodically examined—the blood being tested every three months and the spinal fluid once a year. Oral or rectal administration of drugs may be helpful in such cases if intensive injections have to be stopped (Schulmann and G. Lævy); and the advice of Milian and others that attention must be paid to general hygiene and tonic conditions, including a stay at the seaside or in the country should not be overlooked. There is still much difference of opinion about the value of non-specific protein therapy, malaria-therapy, injections of sodium thiosulphate in Wassermann-fastness, though in general paralysis the efficacy of malarial treatment is now well established.

[1] THE LANCET, 1929, i., 453.

MEASLES IN MANCHESTER.

THE Registrar-General's return has recorded an average of 12 deaths a week from measles in Manchester during the past month. The epidemic reached its height in the week ending Feb. 8th, although the attack-rate in the city is not accurately known, since only the first case of measles occurring in a household is compulsorily notifiable by the doctor in attendance, and the others are reported as they come to the notice of the school medical officer and in other ways. During the past five years the measles mortality-rates per 1000 living in the city have been 0·17, 0·20, 0·21, 0·16, 0·08, the figures being only slightly higher than those for the country generally over the same period. The disease is now more prevalent and the mortality is higher in the central and more crowded districts of the city. A large proportion of the deaths occur in children under five years of age, as is indicated by the following figures. In 1925 there were 129 deaths, 123 of which were of children under five years of age; in 1926 there were 156 deaths, 151 of which were under five; in 1927 there were 164 deaths, 156 of which were under five; in 1928 there were 123 deaths, of which 121 were under five; and in 1929 there were 60 deaths, of which 58 were under five. Every known case of measles is visited by a health visitor, who advises the public health authority as to the arrangements for nursing. In any case where poverty prevents the provision of proper nourishment for the patient, free or cheap milk is provided by the corporation. Wards are set apart at the infectious hospital for the reception of cases of measles in which the home conditions are unsuitable. The number of beds so allocated varies; at the present time the number is 40. During epidemic times as many beds as can be spared are set apart for this purpose, as it is believed in Manchester that this provision is of the utmost value in

the nursing and treatment of bad cases. The subject of measles is dealt with in popular lectures which are given from time to time by medical officers of the public health staff. During times of epidemic, also, the aid of the district nursing association is called in, and cases are referred to it for nursing, a grant for this service being made by the corporation.

THE STOCKHOLM PÆDIATRIC CONGRESS.

THE second International Pædiatric Congress will be held at Stockholm on August 18th–21st, as has already been announced in our columns. The Crown Prince and Crown Princess of Sweden are the patrons of the Congress, and a Swedish organisation committee has chosen the following subjects for discussion :—

(*a*) The biological effect of direct and indirect ultra-violet irradiation ;
(*b*) The physiological and pathological significance of the thymolymphatic system ;
(*c*) The psychology and pathopsychology of childhood ; their significance as a branch of pædiatric research and teaching, and their application in medico-social work.

The names of the introducers of these subjects will be announced in the near future, as well as the names of those announced in advance by their respective national committees as intending to take part in the discussion. Free debate will follow the introductory addresses by the announced speakers. We have also received an intimation that notification of "free lectures" should be in the hands of the organising committee by April 1st. It is evidently expected that, apart from reports and discussions which have already been arranged for, members of the Congress may desire to initiate debates on particular subjects, when, if the committee approve, from 15 to 20 minutes will be allotted to such "free lectures."

All communications are to be addressed to Dr. I. Jundell, Second International Pædiatric Congress, Stockholm, Sweden, and application for tickets of adherence should preferably be accompanied by the fee, sent as a cheque or money order, and all names and addresses should be printed in block capitals. The fee is 20 Swedish crowns for adherents, and half that sum for accompanying members of their families—a Swedish crown is 1*s*. 1½*d*. For these special pleasure trips have been planned.

AMSTERDAM CONGRESS OF CYTOLOGY.

THE second International Congress of Cytology is to be held in Amsterdam on four consecutive days early in August, either at Amsterdam or Groningen, the precise details to be decided later. The first subject will be the cell and its properties, when A. Gurwitsch (Moscow) will deal with the problem of mitogenetic radiation, and A. Krontowski (Kiev) will speak on carbohydrate metabolism in tissue cultures and its changes under various conditions. The third subject will be the properties of the living cell, either when stained vitally or on micro-section. Possibly there may be time to take up radio-sensitiveness at the same session, and a film by R. Canti (London) will be shown. On one of the other days A. Timofejewsky (Tomsk) will speak on the properties of the blood and connective tissue in culture, while W. Bloom (Chicago), successor and pupil of Maximow, will take as his chief subject the formation of blood in tissue culture. W. von Möllendorff (Freiburg) will deal with the potency of fibrocytes in culture and tissues. For another session the subject of growth and its relations to differentiation and regeneration has been chosen, and among individual contributors are mentioned H. C. Fell (Cambridge) on bone-tissue in culture, A. Policard (Lyon) on cartilage in tissue culture, and L. Doljanski (Paris) on cultivation of liver-tissue and the maintenance of its properties in culture. The subject will be closed with a contribution by A. Fischer (Berlin) on regeneration in tissue culture. A proposal has been made from various quarters to devote the fourth day of the Congress to a discussion on the significance of tissue culture in relation to the culture of bacteria and viruses. The suggestions are as yet provisional and any who wish to take part are invited to communicate before April 1st with the general secretary of the International Preparatory Committee, Frau Prof. Rh. Erdmann, Berlin-Wilmersdorf, Nassauische-str. 17. It is understood that the Histological Institute of Prof. G. C. Heringa in Amsterdam will provide the scientific centre for experimental work.

PRELIMINARY TRAINING FOR NURSES.

THE latest gift of the Rockefeller Foundation to University College Hospital is a preliminary training school for nurses, which was opened by Prince George on Wednesday afternoon. Such a school has been in existence for many years, but it has been inadequately housed. With increase of the number of beds has come a need for more nurses, and the admirable aim of the authorities is to enlarge the theoretical background of practical instruction, and incidentally encourage a better type of entrant. The variety and increasing scope of a nurse's life make a broad professional outlook more and more desirable, and the Rockefeller Foundation is anxious to support institutions which are likely to turn out competent administrators, teachers, and supervisors who can spread the best traditions and methods. The new school is well equipped for the work it has to do. It is on six floors, with separate dining-room and practice kitchen, a laboratory department, and a demonstration room which is fitted like a ward, so that the students will not feel lost on going into the main hospital. Like the students, nurses in training will have access to the anatomy school. Two sister tutors and a staff nurse will have their quarters in the school, and there is room for 20 students, besides the domestic staff. The period of preliminary training is two months. During the second month the students will visit the hospital daily and engage in ward work, and at the end of their term they will be examined in the theory and practice of nursing. If successful, they will then be accepted as probationers. Provision is to be made for Rockefeller students from abroad, who, having been awarded a year's Fellowship, come to England for further experience.

THE SURGICAL TREATMENT OF DEAFNESS.

MIDDLE-EAR deafness, or "conduction-deafness," consists of three principal groups, those due to suppuration and its results, those due to chronic non-suppurative middle-ear catarrh, and otosclerosis. Much interest attaches to measures for the relief of deafness due to the last-named disease, for it frequently advances to a very severe degree, and may be accompanied by excessive tinnitus, and is uninfluenced by any form of treatment. In the last two decades of the last century there was a considerable degree of activity in this direction, and numerous intratympanic operations were designed for the relief of all forms of middle-ear deafness, but the distinction between the various forms were not so well understood then as now. The essential lesion of otosclerosis is the growth of new spongy bone in the capsule of the labyrinth, with consequent fixation of the stapes and often also with occlusion of the fenestra rotunda. It is not to be expected that excision of the drum-membrane, or the establishment of a communication between the antrum and the meatus, as suggested by Malherbe in 1899, would achieve any permanent good in such cases, and they have not, in fact, been found to be successful. Kessel in 1876, and Lucas in 1885, reported the result of removal of the malleus and incus : in cases of stapes ankylosis the ankylosis was in most instances the result of suppurative disease; in deafness due to otosclerosis the results were unsatisfactory. Extraction of the stapes has been tried by many

operators and successes have been claimed, but there are many drawbacks; when the ankylosis is complete, it is often impossible to remove the foot-plate, the delicate crura being broken off instead, while, after successful removal, the foot-plate is replaced by a membrane of connective tissue which will itself become the seat of invasion by bony masses as before. As long ago as 1897 Passow made an opening in the labyrinthine wall below the oval window, and reported two cases. In one of these the hearing of whispered speech improved from close to the ear to ½ metre, and the tinnitus subsided; in the second case the tinnitus disappeared after operation, but returned. Gunnar Holmgren,[1] in 1923, reported four cases of otosclerosis operated upon with the use of a binocular microscope. After exposing the inner wall of the tympanum by a mastoid operation, or by detaching the posterior half of the drum, a mucoperiosteal flap was turned forward from the promontory, an artificial window made, and the flap replaced. One case was not improved, but in the remaining three cases the hearing improved at first, then deteriorated, but remained better than before, and better than in the unoperated ear which had previously been the better of the two. R. Bárány[2] has operated on several patients by opening the perilymphatic space of the external semicircular canal and implanting a plug of guttapercha into the fistula; one patient was worse six weeks after operation, one became completely deaf several years later, but the remainder were not made worse, so far as he had the opportunity of examining them.

On these not very encouraging data, Maurice Sourdille[3] has recently elaborated a similar operation, which he performs in two stages, working with a magnifying lens or a binocular microscope. At the first operation the mastoid is opened, the membrana tympani is separated from its attachment along the postero-superior half of its circumference, care being taken to preserve its connexion with the delicate membrane forming the bottom of the external auditory meatus; following the resection of the entire outer wall of the attic, the chain of ossicles is examined through the microscope, and the head of the malleus resected with or without removal of the incus. The tympanic membrane is replaced and the bottom of the meatus made into a flap which envelops the incus and is applied to the refreshed inner wall of the attic, thus shutting off the tympanum from the posterior part of the middle-ear cleft. The second operation is performed after an interval of several months; a flap is lifted forwards from the region of the bend of the external semicircular canal, and an opening is made into the perilymphatic space, care being taken not to damage the membranous canal, and the little flap is replaced. Mr. Sourdille has performed the first operation ten times on cases of chronic progressive deafness, and the second operation, of opening the semicircular canal, three times. In cases of deafness of medium intensity, he has found so much improvement after the first operation that he has been able to defer the second stage. This operation is practically an ossiculectomy, and it is not clear in what way it can improve the hearing in a case of otosclerosis. It appears that he does not restrict the operation to the extremely deaf, as do Holmgren and Bárány, but considers it suitable to all cases of otosclerosis where bone-conduction of the 128 v.d. fork is maintained or increased. He states that the technical results have been excellent in all but one case, in which further operation was required, and claims that in an almost deaf ear, provided that the bone conduction is maintained, the hearing can be improved to several metres for loud conversation. He makes one surprising statement, which is at variance with Holmgren's experience: it is that improvement in the hearing and in the tinnitus occur equally in the unoperated ear. This would seem to be the result of auto-suggestion, and shows how difficult it is to estimate the functional results of treatment of the deaf, for it is well known that these patients will show a temporary improvement after all kinds of treatment. Mr. Sourdille does not say how long his patients have been under observation, but it is probable that a minimum period of two years is necessary before it is possible to state that improvement is permanent.

On theoretical grounds it would seem that the surgical procedure which offers the best prospect in the treatment of otosclerosis is the establishment, if possible, of a permanent opening in the bony capsule of the labyrinth, covered with a very thin epithelial graft, to take the place of the occluded oval window; but as the condition of the round window cannot be determined beforehand, all such operations must necessarily be tentative. A patient should not be submitted to an operation of this kind unless he is so deaf as to be unable to follow his occupation, and yet he must not have any considerable impairment of the labyrinth. It follows that surgical treatment is suitable only for a small proportion of cases of middle-ear deafness. It is just possible, however, that a surgical technique may be devised which may improve the hearing of a certain proportion of patients suffering from deafness due to otosclerosis, as well as to fixation of the stapes from other causes.

[1] Acta Oto-Laryngol., 1923, v., 460.
[2] Ibid., vol. vi., p. 260.
[3] Bull. de l'Acad. de Méd., 1929, cii., 674.

WE have to announce the death of Sir John Fagan, at Portarlington, at the age of 86. He was consulting surgeon to the Belfast Royal Hospital and the Belfast Hospital for Sick Children.

IT has been decided to hold the Third International Congress of Radiology in Paris at the end of July, 1931. The President will be Dr. Antoine Béclère, the Vice-Presidents Dr. J. Belot and Prof. Cl. Regaud (Paris), Prof. J. Cluzet (Lyon), and Prof. Réchou (Bordeaux), and the Secretary-General Dr. Ledoux-Lebard, to whom inquiries should be addressed at 122, Rue La Boëtie, Paris (8e).

THE impending retirement is announced of Dr. Alfred Eichholz, chief medical inspector to the Board of Education. Dr. Eichholz, who is a Fellow of Emmanuel College, Cambridge, has been an inspector of schools since 1898. His reports on the problems of the feeble-minded were among the first investigations of the kind, and led to his being asked to give evidence before the International Commission on Physical Deterioration in 1903, and the Royal Commission on the Feeble-minded in 1908. His knowledge of the special schools in this country may well be unrivalled.

DONATIONS AND BEQUESTS.—The late Dr. John Buchanan, of London, left £4000 for bursaries at Glasgow University, where he graduated, to be used for the foundation of two bursaries in medicine, to be called the John Buchanan Bursaries; and £4000 to the University of Liverpool to maintain a lectureship in Esperanto and to stimulate by prizes the study of the language among matriculated students at other universities.—Dame Mary Hope Walker Cargill, of Lowther-terrace, Glasgow, left over £17,000 for Scottish charities, including £5000 to the executors for charity, £3000 to Glasgow Royal Maternity Hospital, £2000 to the Royal Samaritan Hospital for Women, Glasgow, and £1000 to the Hospital for Sick Children, Glasgow.—Mr. Harold Arthur Lowther, of The Wellington Club, W., and of Bicester, Oxon., left £1000 to St. Dunstan's Hostel for Blinded Sailors and Soldiers and £500 each to the London Hospital, the Middlesex Hospital, Charing Cross Hospital, and St. George's Hospital.—Mr. John Richard Ward, of Cross-street, Manchester, who left £30,694, gave one-third of the ultimate residue of his estate to the Manchester Royal Infirmary for the endowment of beds in memory of his wife and his late daughter, Ethel Railton Ward.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LXV.—THE SIGNIFICANCE AND VALUE OF EXAMINATIONS OF MILK.

PART I.*

AN examination or analysis of milk may be undertaken with two objects, the first to ascertain the chemical quality and the second to determine the bacterial purity. Although medical practitioners are concerned with the chemical quality of milk, especially in relation to its nutritive value, it is the bacterial purity in which they are vitally interested.

Chemical Quality.

Milk is such an important article of diet for young children and invalids that it is imperative that the richness of its important constituents should be maintained. On the other hand, milk is so easily sophisticated that a constant watch must be kept on the quality of what is sold. Local authorities under the Sale of Food and Drugs Act, 1928, which codified all the requirements of previous Food and Drugs Acts, are compelled to appoint public analysts and to take samples periodically for the analysis of milk along with other articles of food and drugs, and generally to administer the requirements of the Act. A medical officer of health, or a sanitary inspector, or a specially appointed officer may at any time take samples of milk and submit them to the public analyst for analysis. These officers will always act on a complaint from a medical man when deficiency in the quality of the milk is suspected. So active have the local authorities been during the last 20 years that the sophistication of milk has very greatly declined. The possibilities of avoiding detection are so remote and the penalties on conviction are so great that the game is not worth the candle.

The usual methods of sophistication of milk are by abstracting some of the milk-fat, by adding skim or separated milk and so reducing the percentage of fat in the whole, or by adding water, which reduces not only the fat but the proteids, sugar, and other constituents.

The general appearance of the milk is but a very rough guide to the quality, and is of little or no value. So also is the estimation of the cream, which rises by the action of gravity after the lapse of a certain time. Milk may be quite genuine, yet the cream may not be very evident in the cream-tube. Temperature affects the rising of the cream, but the treatment to which the milk may have been subjected at the dairy has a much greater influence. For instance, if milk is heated above 160° F., as happened with the old method of "Flash" pasteurisation, which will be discussed later, the amount of cream which rises, or the "cream-line," as it is termed in the milk trade, is adversely affected. Again, if the milk has been homogenised, the amount of cream rising after even 48 hours may be very little indeed. In the process of homogenisation the milk is forced at great pressure through a steel disc perforated with small holes on to an agate plate. The effect of the splashing of the minute particles of fat on to the agate plate with great force is to break up the fat globules to such a small size that they fail to rise in the milk on standing. Milk so treated might, therefore, be misjudged as to quality, yet it contains all the constituents of genuine milk, the only difference being that the fat globules are so small that they will not rise. In at least one part of the London area homogenised milk has come to be appreciated by housewives because it is impossible for any member of the household to abstract the precious cream from the day's stored supply.

The only true test of chemical quality, it can therefore be assumed, is the estimation by analysis of the main constituents. In an analyst's report the composition of the milk is stated as so much milk-fat, so much non-fatty solids, and so much water. In the non-fatty solids are included the sugar, proteids, and mineral salts. The average composition of genuine cow's milk is as follows:—

Fat			3·76
Non-fatty solids	Sugar	4·75	9·04
	Proteids	3·57	
	Mineral salts	0·72	
Water			87·20

By the Sale of Milk Regulations, 1901, made by the Minister of Agriculture, the composition of genuine milk is presumed to be not less than 8·7 per cent. milk solids and not less than 3 per cent. fat. It is very rare that milk from a herd of cows gives less than 8·7 per cent. milk solids, or less than 3 per cent. fat, so that when the former are reduced in percentage below that amount it is presumed that water has been added, and that when the fat is lower it is presumed that fat has been abstracted. Milk containing less than these percentages of constituents, especially if it comes from single cows or small herds in midsummer, may nevertheless be genuine.

Variations in Chemical Composition.

The chemical composition of milk varies with the breed of the cow, its individuality, the period of lactation, its age, the thoroughness with which milking is carried out, the quality of the feeding, the intervals between the milkings and the season of the year, but the variation is chiefly in the fat content, the variation in the non-fatty solids not being marked on any occasion. It is comomn knowledge that breeds such as the Jersey, Guernsey, Devon, Ayrshire, and others produce milk richer in fat than the Shorthorn, which is the most common dairy cow, and that individual cows give a higher percentage of fat than others. The most important of all these factors, however, is the length of the interval between successive milkings. The longer the interval between the milkings the lower the percentage of fat, and since the interval between the morning and afternoon milking is usually much shorter than that between the afternoon and morning, it follows that the milk produced at the afternoon milking has a much higher percentage of fat. In individual cows the difference may be as much as 50 per cent. By making the intervals as near as possible equal, the quality of the morning and afternoon milk may be kept about the same. This factor is therefore, to a very large extent, within the control of the farmer.

By a now famous legal decision, Hunt *v.* Richardson, if the farmer proves that the milk examined was as it came from the cow, no conviction can be recorded even though the purchaser is prejudiced by receiving milk of poor quality. A considerable amount of discussion arose on this legal decision and on other decisions which followed it. Some on the one side contended that the result would be that the farmer would not aim at improving the fat content of the milk produced by his stock, that adulteration would be more likely to escape being penalised by the simple expedient of bringing proof that the milk was as produced by the cow, and that the purchaser should have some guarantee of quality and should not be prejudiced. On the other hand, the farming interests contended that, even though many adulterations might escape from the deserved penalty, no farmer should ever be penalised for selling poor yet genuine milk, and that the remedy was to pay for milk according to its fat content, milk of a higher fat content being met with a higher price. In any case, the law stands as decided by Hunt *v.* Richardson.

Analysis will detect the presence of colouring matter and preservatives, such as boric acid, in milk but, as

* Part II. will appear next week.

the addition of these is specifically forbidden by law, and as their value has come to be regarded as slight from the dairyman's point of view, it is rarely that suspicion of their presence arises.

Bacterial Purity.

The question of bacterial purity may be considered from two points of view, the first in regard to milk produced with special precautions, as in graded milk, and the second in regard to milk infected by bacteria which are likely to produce disease in the human subject. Ordinary market milk may contain any number of bacteria up to millions per cubic centimetre, the number of bacteria present having a distinct relationship to the care with which it has been produced at the cowshed, the manner in which it has been handled in its transit to the consumer, the temperature at which it has been maintained, and the time it has been kept. The total bacterial content is estimated by adding definite quantities of diluted milk to liquefied nutrient agar, which is then poured into flat Petri dishes and incubated at 37° C. for 48 hours. At the end of this time the colonies of bacterial growth, each originating from a single bacterium, are counted and the number of bacteria per cubic centimetre used for dilution is calculated. Coliform bacilli are presumed to be present if, on the addition of milk or dilutions of it, 1 c.cm., 1/10 c.cm., 1/100 c.cm., and so on, to bile-salt lactose broth, acid and gas are produced after incubation at 37° C. for 72 hours, the results being stated as coliform bacilli present in so much milk but absent in the next highest dilution in which a negative result is obtained. For example, the following is the bacteriologist's report on a sample of milk taken in September last year:—

Bacteriologist's Report.

No. of sample .. .. 3 .. Sept. 17th, 1929.
Temperature on arrival .. 22° C.
No. of bacteria per 1 c.cm. .. 113,000 { 1/100 c.cm., 1107 ; 1/1,000 ,, 111 ; 1/10,000 ,, 12
Presence of *Bacillus coli*, 72 hours.
1/100 c.cm. .. .. 1. Positive.
1/1,000 ,, ... 2. Positive.
1/10,000 ,, ... 3. Negative.

Graded Milk.

The Milk (Special Designations) Order has made it possible for the consumer to purchase milk of certain definite grades, produced under definite conditions, and with some guarantee as to bacterial content. These grades are not readily understood by the public, and their names do not convey any idea of their quality, so that the medical practitioner is often referred to for information regarding them and his advice is often sought as to their value, particularly in regard to their use by young children. An endeavour may, therefore, be made to point out as shortly and as clearly as possible the characteristics of the various grades, which are shown in Table I.

First of all comes *Certified milk*—the highest grade—which must be obtained from a tuberculin-tested herd of cows, which must be produced with the exercise of strict cleanliness and be cooled and bottled at the farm where it is produced. The cap of the bottle must have printed on it the name of the producer, the day of production, and the name of the grade. It should not contain more than 30,000 bacteria per c.cm., and the absence of coliform bacilli should be proved in 1/100 c.cm. With a healthy stock of cows, with all the cleanly precautions at the farm, and with the sealing of the bottle before it sets out on its journey, there is a guarantee of high quality and freedom from infection. Unfortunately, its cost is double that of ordinary market milk, and therefore can only be purchased by limited numbers of the community.

The next in quality is *Grade A (tuberculin tested) milk* which also must be obtained from a tuberculin-tested herd and produced with particular care and cooled at the farm. It need not be bottled at the farm, and is usually transported in labelled churns to the retailer's premises, where it is bottled. This grade of milk is allowed up to 200,000 bacteria per c.cm., and coliform bacilli must be absent in 1/100 c.cm. A high degree of security from disease-producing organisms is obtained in this grade of milk, many samples of which often show as small a number of organisms as Certified milk. It can usually be purchased at 50 per cent. above the price of ordinary market milk.

Grade A milk, which is often thought by members of the public to be the highest grade of milk, comes next in the scale of grades. It is produced with particular care at the cowshed, but the cows only undergo a physical test at regular intervals. The milk must be cooled at the farm, but need not be bottled there. It is allowed the same bacterial content as the previous grade. This grade does not give much guarantee of freedom from the bacillus of tuberculosis, and, in the view of many, does not deserve inclusion amongst the special grades on account of this. It is the standard which should be insisted on for all market milk at the present time, and the Government ought to take its courage in both hands and insist upon it. There is no need for elaborate buildings to produce milk of the quality of Grade A. What is wanted is the exercise of intelligent care and reasonable cleanliness on the part of the farmer and his workers.

These last two grades must be delivered to the consumers in the bottles or the sealed containers as received from the farm, in suitable containers of not less than two gallons capacity or in bottles with the name and address of the dealer by whom the milk was bottled, and with the day of production and the name of the grade on the cap of each bottle.

Table showing the standards required under the terms of the Milk Special Designations Order, 1923, for the various designations which it is illegal to use in connexion with the sale of milk, except under licence granted by or under the authority of the Minister of Health.

(A) *Raw Milk.*

Designation.	Herds.	Bacterial content.	
		Maximum bacilli per c.cm.	Coliform bacillus.
1. Certified.	Tuberculin tested and physically examined at regular intervals.	30,000	Absent in 1/10th c.cm.
2. Grade A. Tuberculin tested	Ditto.	200,000	Absent in 1/100th c.cm.
3. Grade A.	Physically examined at regular intervals.		

Other conditions.—(1) *Certified Milk*: Bottled on the farm, name of farm, day of production, and word "Certified" on each bottle cap.

(2) *Grade A tuberculin tested, and* (3) *Grade A.*—Delivered to consumers in (*a*) the bottles or the sealed containers as received from the farm; (*b*) suitable containers of not less than two gallons capacity; (*c*) bottles with the name of dealer by whom the milk was bottled, the address of the licensed bottling establishment, the day of production and the words "Grade A Tuberculin Tested" or "Grade A" on each bottle cap.

(B) *Pasteurised Milk.*

Grade A Pasteurised.—Grade A milk that after pasteurisation as required by the Minister of Health, contains not more than 30,000 bacilli per cubic centimetre and no coliform bacillus in 1/10th c.cm. All other conditions as required for Grade A milk.

Pasteurised.—Any milk that after pasteurisation, as required by the Minister of Health, contains not more than 100,000 bacilli per cubic centimetre. No requirement for bottling.

THOMAS ORR, M.D., D.Sc.,
Medical Officer of Health and School Medical Officer Ealing.

CROTCH v. MILES.

ACTION FOR ALLEGED NEGLIGENCE IN THE KING'S BENCH DIVISION.

In the King's Bench Division, before the Lord Chief Justice and a special jury, an action for alleged negligence was brought against Mr. Ernest Miles by Mrs. Martha H. G. Crotch, the allegation being that a pair of forceps had been left in the plaintiff's abdomen, following an operation upon her performed on November 27th, 1920. It was admitted that an operation had been performed, but it was denied that the forceps had been left in the plaintiff's body. While it was pleaded that the action was barred by the Statute of Limitations, the defendant, through counsel, expressed the intention of giving evidence in answer to the charges.

CASE FOR THE PLAINTIFF.

Mr. J. W. Morris, in opening the case for the plaintiff, said that an operation was performed in 1920 upon Mrs. Crotch, who was then living at Richmond, for the removal of a fibroid tumour, and that after the operation her life had been one of continual ill-health and suffering. In 1922 and 1923 Mrs. Crotch travelled to India and back, and on both occasions she was taken ill, while previously, some five months after the operation, a swelling had appeared near the incision which the plaintiff had pointed out to the defendant, who had reassured her as to its cause. In 1925, when engaged in business in Paris, she became ill and was taken into a hospital, and the following year, when carrying on business in the south of France, she was again taken ill. On this occasion an operation was performed on her, after examination at a clinic in Nice, for the removal of gall-stones. Two years later the presence of the forceps in the abdomen was discovered by X rays, a return of pain having taken her to a doctor who advised the procedure. The forceps were removed in September, 1928, since when the patient had been relieved from pain. Mr. Morris submitted that the history of the case was inconsistent with the forceps having been left behind as the result of the operation for gall-stones, and that they must have been where they were discovered since 1920.

Mrs. Crotch said in evidence that after the operation in 1920 she had abdominal pain and a lump in the region of the incision, and returned to Mr. Miles, who accounted for the pain by the fact that the muscles had not recovered from the necessary injury which they had received, but that the symptoms would disappear. This, she said, did not occur, and no organ in her body seemed to function properly; for eight years she had suffered misery. She said that medical men in India and France had been unable to ascertain the cause of her attacks, and, in answer to the Lord Chief Justice, she stated that a metallic taste in her mouth, which she had complained of, was experienced in 1922, long before the forceps were discovered.

The Lord Chief Justice himself examined the forceps, and gave their measurements as about five inches in length and two and a half inches in breadth. The X ray photographs were at the disposal of his Lordship and the jury.

In cross-examination Mrs. Crotch accounted for the pecuniary claim in detail, including under the headings the cost of failure in a perfumery business, and the expenses incurred for the operation for gall-stones, inasmuch as the gall-bladder would not have been affected had not the forceps been left in her abdomen. No doctor, she said, had suggested an X ray examination until the summer of 1928.

DR. RICHARD HENRY EASINGTON STEVENS.

Examined by Mr. MORRIS.

Do you practice at No. 8, Sheffield-terrace?—I have now moved to No. 9, Campden Hill-road.

Are you a Member of the Royal College of Surgeons and a Licentiate of the Royal College of Physicians?—I am.

Did the lady who has just come from the witness-box ever consult you?—Yes, in 1921, 1922, and 1923.

Have you preserved a record of the dates on which you in fact saw her?—I have.

Perhaps you would just give my Lord and the members of the jury the dates?—I saw Mrs. Crotch in 1921 on Sept. 20th, Oct. 4th and 9th, Nov. 20th, 21st, 22nd, 24th, 25th, 26th, 27th, 28th, Dec. 8th and 28th. In 1922 I saw her in February on the 2nd, 3rd, and 28th, the 29th April, May 6th and 18th, and June 23rd, and in 1923 I saw her on August 29th.

I think you also attended upon Mrs. Crotch's brother?—Mrs. Crotch's brother, Mr. Gordon.

The dates which you have given to my Lord and the members of the jury are dates of attendances upon Mrs. Crotch?—Yes, Mrs. Crotch and not her brother or her husband.

You are quite certain about that?—Perfectly.

Perhaps you would tell my Lord and the members of the jury what Mrs. Crotch complained of when she saw you?—She was complaining of a pain low down in the abdomen, a swelling in the middle line of the abdomen, irregularity of the bowels, and attacks of nausea and vomiting.

Did you know that an operation had been performed upon her in the previous year?—Yes.

Did you in fact examine Mrs. Crotch?—I did.

Was there or was there not a swelling on her abdomen?—There was an abdominal hernia, a ventral hernia as it is called.

THE LORD CHIEF JUSTICE. When did you examine her?—1921 I think, my Lord.

Are you not sure?—I am not sure of that, but I am certain that I must have examined her. I cannot remember the exact date.

And what you saw was a ventral hernia?—A bulging.

What is the meaning of the word "ventral" there?—I believe you would call it the belly.

A bulging of the belly?—Yes.

Mr. MORRIS. I think that, other than the records of dates of which you have told my Lord and the members of the jury, you have not any actual notes written at the time about the case?—No, I am sorry, I destroyed them last year.

As regards your fees, have you been paid by Mrs. Crotch for attendance?—Not by Mr. Crotch but by Mrs. Crotch.

How much?—It was ten guineas in all for Mrs. Crotch.

And you have been paid that?—Yes.

If a pair of forceps were lying inside the small intestine might that cause inflammation of the gall-bladder or some infection of the gall-bladder?—An infection of the gall-bladder can be secondary to an infection of the bowel, and usually is.

Cross-examined by Mr. RAYNER GODDARD.

Did you diagnose this hernia at the beginning of your attendance on this lady?—Yes, the first time I examined her, the date of which I forget, there was a bulging which was obviously a ventral hernia.

THE LORD CHIEF JUSTICE. You are asked, did you diagnose a ventral hernia? If you are using the word "hernia" as being just another name for bulging that was a thing which was obvious on view, was it not?—Yes, my Lord, but by "hernia" I mean a bulging of the contents of the abdomen and not of the wall of the abdomen, a bulging of the contents through the wall.

That is to say, that it involves a burst somewhere?—Yes, my Lord.

Mr. RAYNER GODDARD. Is not a ventral hernia, as it is called, a fairly common sequel to an abdominal operation in a fat subject?—Very common indeed.

It is formed, is it not, by a stretching of the scar?—Usually, yes.

Is it a matter in which surgical help is sought?—In most cases surgical advice is sought, and a belt is prescribed, if no radical operation is advised.

You did not advise the lady to go back to Mr. Miles?—I cannot remember.

So far as you know she did not go to any surgeon?—So far as I know she did not.

You were continuing attendance on her on many occasions during November, and two occasions in December of 1921. What were they for?—For attacks of pain and sickness.

Was that the same during 1922 and 1923?—Yes.

I will give you the condition which the French surgeon described of the gall-bladder when he operated. Dr. Prat described the gall-bladder as very diseased, very thickened, and adherent to the surrounding parts. He says he performed the operation at an acute stage when there was fever, swelling, and pain. Would that description be consistent with the gall-bladder trouble being of long standing?—Yes, but the attacks of pain which I saw in Mrs. Crotch's case were in the lower abdomen and not in the gall-bladder region.

THE LORD CHIEF JUSTICE. Would you mind putting your hand on the sort of places you are referring to?—*That* is the gall-bladder, and *this* is the lower abdomen where most of the attacks of pain were when I attended her. The gall-bladder is just under the liver.

Where is the liver?—Chiefly on the right side under the ribs and partly hidden by the ribs.

Mr. RAYNER GODDARD. Of course gall-bladder pain is very intense, is it not?—Very intense.

And a patient whose gall-bladder was in that condition must have suffered from pain for a very considerable time?—Probably, yes.

An affected gall-bladder, you say, may be secondary to an infection of the bowel?—Yes.

THE LORD CHIEF JUSTICE. He said in fact it usually is.

Mr. RAYNER GODDARD. Do you mean by that that the cause of gall-bladder trouble is infection of the bowel?—Most authorities say that it is an infection which travels up the bile-duct from the bowel.

It is still a matter as to which there is a good deal of doubt as to what causes gall-stones?—Yes.

It is one of the things which medical science has not solved yet?—No, but it is known it follows typhoid frequently.

That is just what I was going to put to you. If a person has typhoid, which is a serious bowel infection, that may affect the gall-bladder?—Yes.

But except for infections of that sort that is as far as medical science has gone on the subject?—I think so.

You do not know of any case in which an infected gall-bladder is supposed to have followed from a foreign body being found in the bowel?—No, I have known it follow an appendix.

That is where you had definite infection, a sepsis from the appendix?—Yes.

THE LORD CHIEF JUSTICE. I suppose cases in which a surgeon's forceps are left in the intestines are not counted in their thousands?—No, I think not.

Mr. RAYNER GODDARD. And, of course, a surgical forceps which has been used in an operation would have been sterilised?—Yes.

And had it not been perfectly sterilised a sepsis would have set up in the bowel?—No, because the sepsis would have been set up in the abdominal cavity outside the bowel.

Do you know that it is said here that the doctor who removed the forceps thinks that it was in the intestine itself?—I do not see how it could have got there.

Could it not have got there?—Unless it had perforated its way through.

By perforation it could get in?—Yes.

As you are here may I ask you about a modern operation. A modern operation is team-work, is it not?—Yes.

The team consists of the surgeon, the assistant, the anæsthetist, and the theatre sister?—And a couple of staff nurses and probationers.

I am not talking about general hospitals but a nursing home. There would be some assistants to carry basins and that sort of thing?—Yes, there would be some nurses.

THE LORD CHIEF JUSTICE. A minimum of five persons and the maximum may be much more?—Yes, my Lord.

Mr. RAYNER GODDARD. And, of course, during the course of an abdominal operation a considerable number of instruments are used and a large number of swabs, towels, sponges, and so forth?—Yes.

Is it recognised in the profession now that the duty of keeping count of the instruments and swabs that are used in an operation is on the sister in charge?—That is almost universally recognised.

THE LORD CHIEF JUSTICE. The theatre sister?—Yes, my Lord.

Mr. RAYNER GODDARD. The surgeon's attention must be concentrated on the patient?—Yes.

And I suppose in all operations it is desirable to get the patient off the table as quickly as possible?—Yes.

Is it the anæsthetist's duty to give warning to the surgeon if the patient is showing signs of collapse?—It is.

Is the moment when you want to ascertain whether the instruments, swabs, and sponges have all been accounted for the moment before the surgeon would begin to stitch up the patient?—It is.

Would it be in accordance with the recognised surgical practice for the surgeon to cease the operation for the purpose of counting the instruments or sponges?—No, that is unusual.

Assuming that a fully trained theatre sister is present, would it be in the interests of the patient that the surgeon should suspend the operation to do so?—No, I should say not.

Does the surgeon then, when it comes to the moment when he is ready to sew up, ask the theatre sister if the count of instruments is right?—Sometimes. Sometimes she volunteers the statement.

Either he asks or the nursing sister says "Count right"?—That is the usual practice.

THE LORD CHIEF JUSTICE. She says "Count right," does she?—She says "Instruments and swabs all correct."

Re-examined by Mr. MORRIS.

I suppose a surgeon sometimes does an operation with a trained nurse that he knows and sometimes operates with a trained nurse whom he may never have met before?—Frequently so.

Would it make a difference to the surgeon as to whether he was operating with a trained nurse whom he knew and could rely upon?—I do not quite understand the question—a difference in what way, a difference to his peace of mind?

Would he place more reliance upon a trained nurse who knew him and whom he knew?—Yes, probably.

About how long in time does an operation for total hysterotomy take?

THE LORD CHIEF JUSTICE. Are you going to leave the question like that, Mr. Morris? Is it not right to ask at least one other question. (To the Witness): Suppose that the nurse in the particular case is not known beforehand to the surgeon, is it or is it not in accordance with good practice that he should still rely upon her for an accurate count of the instruments and the swabs?—If he knows her to be a trained theatre sister, my Lord, he would be justified in putting that confidence in her.

Mr. MORRIS. How long does an operation for total hysterotomy take as a rule?—As a fair average I should say three-quarters of an hour.

THE LORD CHIEF JUSTICE. What does hysterotomy mean?—It means excision of the uterus.

Then, to put it simply, to cut out the uterus takes about three-quarters of an hour?—Yes, my Lord.

Mr. MORRIS. At the start of an operation like that would the forceps be laid out somewhere?—Yes, on the instrument table.

Would they be laid out in groups?—The Spencer-Wells, that is to say, the artery forceps, would be in a row. The other forceps would be in groups. There would probably be a dozen artery forceps, Spencer-Wells.

THE LORD CHIEF JUSTICE. Then you mean a dozen pairs of scissors?—Yes.

Not the single blade?—Not the single blade, my Lord.

Mr. MORRIS. Before actually sewing up the wound would a surgeon feel round the wound, feel inside the body with his fingers?—He might, but the less manipulation the better in most of these cases.

As far as possible would he look inside?—Yes, he would.

THE LORD CHIEF JUSTICE. What is the objection to unnecessary manipulation?—Only that it increases shock to the patient.

Mr. MORRIS. For what purpose are forceps of the nature of the forceps in the present case used?—I do not know what the forceps were in the present case.

THE LORD CHIEF JUSTICE. Would you like to look at them?

THE WITNESS. I would like to very much, my Lord. (Forceps handed to the Witness).

Mr. MORRIS. What sort of forceps are those?—These are Spencer-Wells. They are used for clipping bleeding points and so stopping the bleeding.

You say they are used for clipping bleeding points. Does that mean that the two ends pinch the particular part where the blood is emerging?—Exactly.

What has the surgeon to do to see that that bleeding does not continue when he takes the forceps off?—He may either twist the forceps and so twist the end of the bleeding vessel or he may slide a ligature over the end of the forceps, tie it, and then remove the forceps, leaving the ligature tied on to the vessel.

So as to stop internal bleeding?—Exactly.

An expression has been put to you by my learned friend "team-work." Of that team, as it was put to you, in that operating theatre who is the captain?—The operating surgeon.

THE LORD CHIEF JUSTICE. Does not the word "team" perhaps rather beg the question? Is it so much a team as a division of labour, not all jointly doing the same thing but each separately doing a bit—I do not know.

Mr. MORRIS. May I just get this from you. If the surgeon, after the door of the operating theatre has been closed, gives an order, must that order be obeyed?—Yes, the surgeon is in command then.

He tells somebody to do this, and must it be done?—Yes, except that the anæsthetist under certain circumstances has a say.

THE LORD CHIEF JUSTICE. But is it part of the surgeon's duty not merely to do the actual surgical work as it should be done but also to keep an eye on each of the others to see that each one does his or her part as it should be done?—It is, my Lord, as long as it does not distract too much of his attention from the patient.

The supervision is limited by his primary duty to look after the patient?—It is, my Lord.

Mr. MORRIS. You were asked about one or two particular parts of the body. Would you be good enough to indicate where on the body this swelling was that Mrs. Crotch had?—As far as you can see on me just *there* (indicating) in the region of the navel.

THE LORD CHIEF JUSTICE. Just below the navel?—Yes.

Mr. MORRIS. Is that what is also called the umbilicus?—Yes.

THE LORD CHIEF JUSTICE. Sub-umbilical means below the navel?—Yes.

Mr. MORRIS. Is the operation for hysterotomy one that is sub-umbilical?—It is.

Is the operation for the removal of the gall-bladder supra-umbilical?—It is.

THE LORD CHIEF JUSTICE. That means above it, I suppose?—Above and to the right, as a matter of fact, my Lord.

Mrs. C. Young gave evidence that she had been the plaintiff's maid at the time of the first operation; she said that a month after her return home her mistress had shown her the abdominal wound, when she had seen a swelling.

DEPOSITIONS.

Depositions of witnesses examined in the action Crotch v. Miles, at Nice, in the Republic of France, before Mr. Joseph Wiseman Keogh, His Britannic Majesty's Consul, the Special Examiner appointed by an Order in this action dated 23rd December, 1929.

On the twentieth day of January, 1930, the examination commenced at mid-day. I, the said Joseph Wiseman Keogh, having first administered the oath as prescribed by the rules of the Supreme Court of Judicature, England, to myself, to Miss Renee Bonneau as clerk and shorthand writer, to Dr. Alfred Marie Vadon as interpreter, Mr. John W. Morris (instructed by Messrs. Churchill & Clapham), appeared for the Plaintiff, Mr. Henry C. Dickens (instructed by Messrs. Hempsons) appeared for the Defendant. It was agreed between Counsel for the Plaintiff and for the Defendant that the evidence should be taken direct on to a typewriting machine and that the signing by the witnesses should be dispensed with. I then administered the usual oath of a witness to, and caused to be examined, the following witnesses, who were produced before me on behalf of the Plaintiff to give evidence in this suit.

DR. HENRY FAY residing at No. 20, rue de la Buffa, Nice, having been first duly sworn by me, was examined by Mr. MORRIS on behalf of the Plaintiff.

Are you Dr. Henry Fay?—Yes, I am.

Do you reside at 20, rue de la Buffa, Nice?—Yes, I do.

Are you a surgeon?—Yes, I am a surgeon.

Will you please tell us your qualifications?—I studied at the Faculty of Paris, and I qualified as M.D. in 1912.

Have you been practising as a surgeon since 1912?—Yes.

Are you the assistant at Nice Hospital?—Yes, I am.

Did you perform an operation on Mrs. Crotch on the 27th of September, 1928?—Yes, that is the date in my report.

(It was then agreed between Counsel that the original report referred to, dated the 27th of September, 1928, should be put in as the witness's evidence in part.)

Is that the report that you made?—Yes, I made that report myself.

(Report put in and marked Exhibit "A.")

You speak in your report of an X ray photograph. Had you seen an X ray photograph of Mrs. Crotch?—Yes, I saw it the day before the operation.

Had you seen one X ray photograph or two?—I saw two photographs.

Will you look at these two photographs, are those the photographs which you saw?—Surely.

(Photographs put in and marked "B" and "C" respectively.)

What was your fee for the operation?—I think about five thousand francs. But it has not yet all been paid.

Do you know how long Mrs. Crotch was in the clinic after the operation?—I think about one month.

Do you know Dr. Prat?—Yes, I do.

Is he a surgeon of eminence?—Yes, he is.

Was the laparotomic scar at the place where an incision would be made in an operation for total hysterectomy?—Yes.

Were the forceps at a place underneath that old scar?—Not completely, the end of the forceps was a little lower down than the end of the scar.

If forceps were being inserted in an operation would they be inserted by the surgeon himself?—Sometimes the surgeon, sometimes the assistant.

If a pair of forceps was left inside the body after an operation for hysterectomy, would a swelling be likely to be caused?—Yes.

Would it be likely to cause great pain?—Yes.

Will you look at that pair of forceps produced. Are those the forceps which you removed from Mrs. Crotch?—Yes.

(Original forceps made an Exhibit and marked "D".)

Cross-examined by Mr. DICKENS *on behalf of the Defendant.*

Did you tell Mrs. Crotch that your fee was five thousand francs?—Yes.

How much of that have you been paid?—I am not quite sure, but I think she owes me half.

Have you tried to get her to pay you?—I wrote to her last October, I think.

Have you written more than once?—I think I wrote three times.

Do you know whether the clinic has been paid?—I think so.

Any operation inside the intraperitoneal cavity is difficult and dangerous?—Always.

And it requires great care on the part of the surgeon?—Yes.

And all his attention?—Yes.

Such an operation is a hysterectomy?—Yes.

And a cholecystectomy?—Yes.

For operations of that kind the surgeon must be assisted by a team, an assistant and an anæsthetist and one or two sisters?—Yes.

And each member of that team has his or her particular part in the operation?—Yes.

And if the surgeon knows and trusts the members of the team he will not interfere with their particular part in the operation?—Yes. He will not interfere.

For instance, he will not interfere with the giving of the anæsthetic?—Quite so.

Is it not the practice of surgeons in such an operation to leave the counting and checking of the instruments and the swabs to a sister?—It ought to be like that.

It is impossible for the surgeon himself to keep count of the instruments and swabs which he has put, or his assistant has put, into the body?—He cannot know.

Then it is possible for a surgeon to leave instruments or swabs in the body without personal negligence? (Mr. Morris objected to this question.)—Yes, it is possible.

What are the symptoms of cholecystitis?—Pain in the sub-hepatic region.

What else?—Fever, nausea; sometimes pain in the back and in the right shoulder.

Cholecystitis is inflammation of the gall-bladder, is it not?—Yes, it is.

That itself could not cause trouble in the bladder or in the lower part of the abdomen?—No.

Or pain on defæcation?—No.

Before you operated, did you make an external examination of the patient?—Yes.

And did you, like Dr. Maestracci, discover something hard in the abdomen on palpation?—Yes.

It was quite obvious, was it not?—Yes.

And you could not have missed it?—No.

On Exhibit "E" I have marked with a cross the ileo-cæcal valve and with a circle the duodenum. (Exhibit "E," "Vinton's Anatomical Model," was put in.)

When I said that the forceps occupied a point in the small intestine which one may locate almost half way from the duodenum and the ileo-cæcal valve I meant in the middle part of the length of the intestine (small).

Will you mark on Exhibit "E" exactly where the forceps were located?—I have done so.

Will you look at Exhibit "C." Was that taken from the front or the back?—I think from the front.

Does that photograph show the forceps in the position in which you have marked it on Exhibit "E"?—Approximately the point of the forceps, as shown on Exhibit "C," is in the same position as I have marked it in Exhibit "E."

Are you quite sure of that?—Yes.

Is not the dark part in the centre of Exhibit "C" part of the intestine?—Yes. The large intestine.

And the point at the bottom of that dark part is the rectum?—It is the end of the rectum, the sphincter.

The intestines are shown dark on Exhibit "C" as the result of a bismuth or barium meal?—Yes.

If you diagnosed a swelling or any abnormality in the intestines you would try to find out what it was by giving a meal of bismuth or barium, and take an X ray photograph?—Yes.

Any swelling of the intestine which was abnormal would show itself on an X ray photograph taken after such a meal?—All dilatation is seen under such circumstances as a rule.

Any abnormality?—Some sorts of abnormality could not be seen.

If you suspected some such abnormality as a swelling you would try this method?—Yes.

Were the forceps found inside the intestine itself?—I cannot say exactly whether it was in the tube itself or in a pouch formed by the intestines which were glued together by adhesion, but I concluded that it had been in the tube itself because there was fæcal matter on it.

These forceps have a screw in them?—Yes.

Screw forceps are used in France, are they not?—Generally no.

But sometimes yes?—It may be, I have never seen them.

Do you know the name of F. Gendron?—Yes.

Is he a well-known maker of surgical instruments?—No.

During the war were there not English military hospitals on this coast?—I was not here, I do not know.

Do you know that after the war the English military authorities sold a great quantity of surgical instruments in France?—I did not know it.

Re-examined by Mr. MORRIS.

Does hysterectomy mean the removal of the uterus and of the ovaries?—Yes.

Is that what is known as total hysterectomy?—Yes.

I think you have told Mr. Dickens that a surgeon ought to exercise great care in such an operation?—Great care, yes.

Is it a very serious matter for a surgeon to leave a pair of forceps in the abdomen?—Yes.

Does a surgeon count the number of his instruments after an operation?—No, never.

When a surgeon uses forceps in an operation does he clamp the forceps on to some part of the body?—Yes.

Is the reason as a rule to prevent bleeding?—Either that or to keep some part of the body out of the way.

Has the surgeon to be skilful as to what part he clamps the forceps to?—Yes

And before the surgeon sews up the wound is it his duty to remove the forceps which are inside?—Always.

DR. FREDERICK AYLMER HORT, residing at No. 6, rue du Congres, Nice, having been first duly sworn by me, was examined by Mr. MORRIS on behalf of the Plaintiff.

Is your full name Dr. Frederick Aylmer Hort?—Yes.

Do you reside at 6, rue du Congres, Nice?—Yes.

Are you a Doctor in Medicine and have you practised as a medical man for the last twenty-seven years?—Yes.

Perhaps you will give us your qualifications?—I am L.S.A., M.R.C.S.England, L.R.C.P.London, M.D.Montpellier, France, and a Fellow of The Royal Society of Medicine, London, and M.A. Cambridge.

Did you see Mrs. Crotch in the year 1926?—Yes.

Did you recommend Dr. Prat to Mrs. Crotch in that year?—Yes.

Is Dr. Prat a surgeon of experience?—A surgeon of great experience.

Did Dr. Prat operate on Mrs. Crotch?—He did, on the 8th of June, 1926.

Were you present at the operation?—I was.

For what did Dr. Prat operate?—For an infected gall-bladder.

Is your technical term for that cholecystitis?—Yes.

Does the gall-bladder lie just underneath the liver?—It does.

Did Dr. Prat make his incision in a place that would be usual for cholecystitis?—Yes.

Did Dr. Prat remove the gall-bladder in its entirety?—The bulk, if not all, of the gall-bladder was removed.

Was that operation in the sub-hepatic region?—That operation was confined to the region under the liver. The surgeon had to dig under the liver to get at it.

Did Dr. Prat deal in any way with the lower intestine in that operation?—No, not at all; he did not even explore the rest of the abdomen.

Have you been paid your fees by Mrs. Crotch?—I think she has paid everything she owed me.

Can you tell us what your fees were?—I do not remember exactly, but I think between frs. 1000 and frs. 2000.

Does a surgeon have assistants at an operation?—Yes, he has an anæsthetist, a doctor as assistant, and sometimes a sister.

Of those people who is it that would insert a pair of forceps in a patient's body?—Only the surgeon or his qualified assistant.

Who would remove the forceps before the patient's body was sewn up?—Only the surgeon or his qualified assistant.

Is it the duty of the surgeon to see that the forceps are removed? (Mr. Dickens objected to the question.)—The surgeon's, or his qualified assistant's.

Cross-examined by Mr. DICKENS *on behalf of the Defendant.*

You say you attended Mrs. Crotch for some years. Can you give me approximately the date when you first attended her?—I first attended her in the winter of 1925–26.

Did you attend her more or less continuously up to the date of her operation?—Yes.

I take it that you gradually diagnosed gall-bladder trouble?—My diagnosis would probably have been acute abdominal trouble—a more general diagnosis than of gall-bladder trouble.

By the time you called in Dr. Prat had you diagnosed gall-bladder trouble?—To all intents and purposes, yes.

The recognised symptoms of gall-bladder trouble are pain in the region of the gall-bladder?—Yes, acute pain.

Possibly pain in the back?—Yes.

In the right shoulder?—Yes.

Nausea?—Yes.

Anything else?—No.

I take it that as the lady's medical attendant, and as she complained of abdominal pains you had examined her very carefully more than once?—No doubt.

You were not surprised when Dr. Prat diagnosed an infected gall-bladder?—Not in the least.

He operated for cholecystitis and nothing else?—That is rather a difficult question to answer directly, for an operation on an acute abdominal condition is always more or less of an exploratory nature. In fact his operation was confined entirely to the sub-hepatic region.

You, yourself, after careful examination, had diagnosed no trouble except in that region?—None whatever.

Were you the assistant in the operation?—I was not the principal assistant, I think there was another.

Was there a theatre sister there?—Yes.

I take it, after this distance of time, you find it difficult to remember the details?—Certain details are difficult to remember.

I take it Dr. Prat would have had to use swabs?—No doubt.

Forceps to cut off the bleeding points?—Yes.

Those would be pressure forceps?—Yes, but we generally call them artery forceps.

A number would be used?—No doubt.

Do you know what system was adopted to count and check the swabs and instruments which were used?—No.

It is usual, is it not, to leave this counting and checking to the theatre sister if she is properly qualified?—I believe so in England.

Nowhere else?—Certainly not in France.

You do not suggest, do you, that the surgeon, whose whole attention must be concentrated on the actual operation, can keep count of the swabs and instruments which he or his assistant inserts into the body?—I think so in the case of Dr. Prat, because any deep swabbing he would do himself.

As to instruments, do you suggest that he would be able to tell you after the operation had gone on some time how many he or his assistant had used?—That is not my suggestion.

What is your suggestion about that?—My suggestion is that he would at any stage know whether or not any instrument was left in the body.

Do you mean because he could see them?—No, because they form part and parcel of the bit of work he is doing.

But supposing a pair of forceps which was attached to a bleeding point had slipped accidentally into the wound and become hidden either by blood or by the folds of the intestine, he could not necessarily be expected to know that that instrument was in the body, unless he had kept an accurate account of the instruments used?—It is conceivable, certainly, but it is very unlikely in that particular area, and under those particular conditions.

If the patient is in a state of collapse a surgeon would be more likely to fail to discover the presence of such an instrument?—I cannot say.

At this operation in the region of the gall-bladder the whole of the intestine would be below the region of the operation?—At an operation of this sort the intestines are liable to bulge in any direction.

And I suppose they are all covered with blood and mess, aren't they?—No, they are all shut off.

By swabs and towels?—Yes.

They are purposely shut off, firstly to keep them out of the way of the operation, and secondly to protect them from shock or injury or infection?—Yes.

But even so, under such circumstances, in any abdominal operation it is possible for instruments to become temporarily hidden in the intestines?—No, not in any abdominal operation, but in an operation such as this I suppose it is possible.

Dr. Fay is a surgeon of some repute in these parts?—Yes, he is a young surgeon and has not been here very long, but he is very well thought of.

You, yourself, are not a surgeon?—No.

Dr. Fay, who is a French surgeon, has told us to-day that no surgeon ever counts or checks the instruments used at an operation. Would you contradict that?—I am not in a position to say either way.

You continued then to attend Mrs. Crotch after the operation?—Yes.

Off and on?—Yes. Continuously through her convalescence and at intervals since.

Up till when?—Up to the present day.

Did she make a good convalescence?—To the best of my remembrance an excellent one.

Did Dr. Prat suggest to you that there was likely to be any further trouble after the operation?—No.

What sort of treatment did you give her?—Only dietetic treatment.

Did she complain to you from time to time of abdominal pain?—Never.

She saw Dr. Maestracci on the 12th of September, 1928, how long before had you seen her?—I had not seen her for a considerable time probably.

Did she ever complain to you of urinary trouble?—Not until after she had seen Dr. Maestracci.

Was it a normal operation of its kind?—Perfectly normal with no complications.

Re-examined by Mr. MORRIS.

You told Mr. Dickens that an operation for an acute abdominal condition is always more or less exploratory?—Yes.

Will you explain a little more fully why it was exploratory?—Because no one can be certain of what is going on inside an acute abdomen until he has looked to see.

The diagnosis is really provisional?—I look upon the diagnosis of an acute abdomen as always provisional.

But in fact there was no exploration other than in the sub-hepatic region?—None whatever, and for a very good reason, that the patient was not a good subject for operation; she was fat, not a good colour, and it was to her interest to get her off the operating table as soon as possible.

You told Mr. Dickens that forceps are attached to a bleeding point?—Yes that is what they are for.

Does the surgeon have to exercise his skill to decide exactly where to attach the forceps?—Certainly.

When he removes the forceps has he to make some arrangements to see that the bleeding does not recommence?—That depends on the bleeding. If the vessel is tied it is tied before the forceps are removed.

Is it the surgeon who does that tying?—The surgeon or his qualified assistant.

Is the matter of bleeding one that the surgeon would have to consider before finally sewing up the wound?—Yes, certainly.

Dr. LOUIS PRAT, residing at No. 24, Avenue des Fleurs, Nice, having been first duly sworn by me, was examined by Mr. MORRIS on behalf of the Plaintiff.

Are you Dr. Louis Prat?—Yes.

Do you reside at 24, Avenue des Fleurs, Nice?—Yes.

Are you a surgeon?—Yes.

For how long have you practised as a surgeon?—Twenty-eight years.

Will you please tell us your qualifications?—I am a Doctor in Medicine of the Faculty of Paris, ex-house surgeon of Paris Hospitals, surgeon to the Nice Hospitals, surgeon to the English Hospital of Nice, member of the International Association of Surgeons.

Are you a member of the French Association of Surgeons?—Yes.

Are you also Chevalier of the Legion of Honour?—Yes.

About how many operations do you perform in a week?—About 25 a week.

Did you operate on Mrs. Crotch on the 8th of June, 1926?—Yes.

Did that operation take place at the Belvedere Clinic, at Nice?—Yes.

Where did you operate on Mrs. Crotch?—I operated in the hepatic region between the liver and the transverse colon adherent to the wall of the abdomen.

What did you do in the course of that operation?—I removed the gall-bladder, which was very diseased, very thickened, and adherent to the surrounding parts. I performed the operation at a very acute stage when there was fever, swelling, and pain.

Did you explore any part of the abdomen other than the sub-hepatic region?—I dealt only with the local condition as it would have been a mistake to do anything else as it might have given a peritonitis.

Had Mrs. Crotch had a previous laparotomy?—Yes. I noticed a laparotomy scar and at the level of the scar I noticed either a sort of rupture with a swelling or a hard mass. I cannot remember exactly.

What did you consider that that was?—I thought it was an epiploic.

I want you to explain further what you thought it was and what epiploic means?—When I examined the abdomen of the patient I noticed that she had a laparotomy scar with an eventration, at the level of which I felt a swelling which I diagnosed to be epiploic. Epiploic means abnormal adhesions of the inflamed omentum.

Was the operation a difficult one to perform?—Yes.

Will you look at Exhibits "B" and "C," two X ray photographs? Is the part of the abdomen where forceps are shown in them anywhere near the region where you operated?—No.

What pattern of forceps do you use?—Kocher forceps made by Collin. They have no screw in them.

Instead of a screw what do they have?—The two blades are detachable, and the type I use are quite different to the screw type.

Will you look at Exhibit "D." Do you use forceps of that pattern?—No.

Do you ever use forceps of that type?—Maybe during the war, and not for operation.

Do you use that type at the Belvedere Clinic?—No.

Are those forceps of the Collin type?—No.

Did you use those forceps (Exhibit "D") when you operated on Mrs. Crotch?—No.

From the appearance of those forceps can you tell whether or not they have been in somebody's body for some time?—I do not know, I have no experience of this kind of thing.

Did you see Mrs. Crotch after the operation in 1926?—I saw her afterwards, about three months ago.

Do you remember what your fees were for the operation?—Mrs. Crotch sent me the last balance a few days ago; I am not quite certain as to the amount. I think about four thousand francs.

Cross-examined by Mr. DICKENS *on behalf of the Defendant.*

You had very great difficulty in getting your fees paid by Mrs. Crotch?—Yes. It required a debt-collecting agent to intervene, and then I only got it in instalments.

French surgeons do sometimes use forceps with a screw?—Probably.

I understand you yourself have seen such forceps?—Yes, and I have seen one pair here to-day.

During the war there were British Military Hospitals on this coast?—I do not know, I was in Belgium.

Do you know that at the end of the war the British Military Authorities sold large quantities of surgical instruments in France?—No.

When you operate who hands you the forceps you want to use?—I take them off the table myself.

Who is present at the operation?—My house surgeon, the doctor, and the anæsthetist, and there is also a sister.

Sometimes does your assistant put in forceps?—Exceptionally.

And the swabs?—In principle the assistant puts in the swabs.

At your operations, who counts the swabs as they go in?—Nobody counts them.

Who counts the forceps?—Nobody counts them.

This operation was a difficult and dangerous operation?—It was not a simple operation, fairly difficult, and it was dangerous on account of the general condition of the patient, who was also alcoholic.

She was alcoholic?—I think so. A little. Her doctor told me so. She was not a teetotaller.

When a patient is in the condition in which this patient was, it is important to bring the operation to an end as quickly as possible?—Yes.

Do you agree with Dr. Hort that during this operation the intestines were bulging in every direction?—I did not see the small intestine. The transverse colon was swollen, and I had to push it down the whole time to take it out of the way. The colon was always inclined to get into the way of the operation.

It is possible, is it not, in such an operation for a pair of forceps, if it has become accidentally detached, to get among the intestines and to get hidden there?—No, I do not see that that could happen.

Why?—I left a drain in the wound and that would not have healed up if I had left a pair of forceps in the wound.

But if the forceps could have slipped down into the abdomen between the intestine and the wall it would not have affected the drainage of the wound, would it?—If it had slipped right down out of that region it might not, but it would if it had remained in that region.

Will you please mark on Exhibit "B" the line of your incision?—(*The Witness does so with a dotted line.*)

Now about this hard mass. Your recollection of this operation is naturally not a very good one?—My recollection is not very precise. When I examined the patient for a moment I thought of reopening the old laparotomy scar in order to re-make it, because I thought it was not in order; but I contented myself in doing the simple operation on account of the bad state of the patient.

Did you warn Dr. Hort about this?—I do not think so.

Did you tell the patient about it?—I do not think I did.

You were the only person who knew about this; why did you not warn either Dr. Hort or the patient about it?—I do not remember exactly what was at the level of the scar. I remember that the patient had abdominal trouble which had nothing to do with the hepatic trouble. Mainly there was defæcation trouble, a strong pain which we call tenesmus.

This trouble was abnormal and would have to be watched by the patient's doctor?—It had to be found out what was the trouble with this abnormal condition.

How would you find out what the trouble was?—How could I find out?

Could you not find out possibly by X ray with bismuth or barium what the abdominal trouble was?—Yes, sometimes the X ray would show the cause of the adhesions.

Did you not consider it your duty to tell Dr. Hort about this, so that he could have such an X ray photograph taken?—The patient left the clinic before her wound was completely healed, and I never saw her again, until recently.

But you saw Dr. Hort after the operation?—Probably. I have constantly seen him again.

But you never told Dr. Hort about it?—I never spoke to Dr. Hort about this case again.

May I take it that the first time that you mentioned this hard mass to anyone was in December, 1928?—I have never spoken of this case since the operation.

But you did mention it in December, 1928?—I forgot all about the case until I was asked by the Plaintiff's Solicitor to make a report. I then made a report, which I now produce, marked "F."

Re-examined by Mr. MORRIS.

In the report which you have just mentioned (Exhibit "F") you say you noticed the existence of a swelling. Is that a reference to the hard mass of which you have been speaking?—Yes.

It is agreed that the two photographs, "B" and "C," are to be admitted in evidence without calling the photographer.

The Examination was then adjourned until Tuesday the 21st inst.

Dr. DOMINIQUE MAESTRACCI, of No. 12, Avenue Henri Isnard, at Vence, having been first duly sworn by me, was examined by Mr. MORRIS on behalf of the Plaintiff.

Are you Dr. Dominique Maestracci?—Yes.

Do you live at No. 12, Avenue Henri Isnard, Vence?—Yes.

Are you a Doctor of Medicine?—Yes.

Will you please tell us your qualifications?—I am an ex-house surgeon of the Paris Hospitals and Laureat of the Faculty of Paris. I am M.D. of Paris.

Did you examine Mrs. Crotch in September, 1928?—I examined Mrs. Crotch on the 12th September, 1928.

Have you made two reports about Mrs. Crotch?—Yes, I made one by myself and one in conjunction with Dr. Fay.

(It was then agreed between Counsel that the original reports referred to and dated respectively 15th of October, 1928, and 27th of September, 1928, should be put in as part of the witness's evidence.)

Is that your report dated the 15th of October, 1928?—Yes, it is.

(Report put in and marked "G.")

Will you look at Exhibit "A"—is that the report that you signed with Dr. Fay, dated the 27th of September, 1928?—Yes.

Were you present when an operation was performed on Mrs. Crotch on the 27th of September, 1928?—Yes.

Did you administer the anæsthetic at this operation?—Yes.

Are the matters you speak of in your report all correct?—Yes.

Did you see Dr. Fay extract a pair of forceps?—Yes.

Will you look at Exhibit "D." Are those the forceps which Dr. Fay extracted?—Yes.

Are those forceps of a French make?—No.

When those forceps were in the body, how were they placed?—They were placed in the small pelvis.

In your report you speak of a frenulum which passed through one of the rings of the forceps? Will you explain what sort of a thing that was?—It was what was left of one of the round ligaments which was formerly attached to the uterus. This is also called the broad ligament.

How did it come about that that frenulum was passed right through one of the rings of the forceps?—The round ligament had been cut at the first operation. The forceps were hanging by the ring through which the ligament had penetrated, and had formed adhesions to the intestine. The ring of the forceps was lying at the site of the adhesions resulting from the first operation.

Does that mean that the ligament of which you have spoken had grown?—No. The free end of the round ligament passed through the loop of the forceps and became adherent to the small intestine by the process of cicatrisation.

Would that process take some time?—Yes.

Will you look at the two X ray photographs marked "B" and "C" respectively. Where do those photographs show the point of the forceps to be?—Inside the small pelvis, on the right hand side.

Whereabouts were the forceps with reference to the external laparotomic scar on Mrs. Crotch?—On the right half of the scar, underneath.

Was the external laparotomic scar on Mrs. Crotch at the point where an incision would be made for hysterectomy?—Yes.

Whereabouts were the points of the forceps when they were found?—Inside the small pelvis on the right hand side.

For what purpose would you expect such a pair of forceps to be inserted?—For hæmostatic purposes.

Ought such a pair of forceps to be removed before the patient is sewn up?—Surely.

Do you remember what your charges to Mrs. Crotch were approximately?—Four thousand five hundred francs.

Have you been paid that?—Not at all. I have received nothing.

That is still owing to you?—Yes.

Did Mrs. Crotch's operation take place at the Clinique Ste. Marguerite?—Yes.

Before that operation had Mrs. Crotch undergone any treatment?—Yes, she told me she had had high frequency treatment.

But that treatment did not continue after she saw you?—No.

Do you know Dr. Prat?—Yes.

Have you seen him operate?—Yes.

Have you seen him operate a few times or often?—Often.

What kind of forceps does he use in his operations?—Collin type.

Have you ever seen him use any other type?—No.

Cross-examined by Mr. DICKENS *on behalf of the Defendant.*

You cannot say of your own knowledge that Dr. Prat never used forceps with a screw?—No, but I can only speak from what I have seen. In France surgeons are in the habit of using only detachable forceps, because there are no other kinds in the hospital services.

Will you look at this catalogue. On page 110 there is a pair of forceps with a screw?—It is not a hæmostatic forceps. Those are cheap forceps.

But they could be used in an abdominal operation?—Yes, but not by a conscientious surgeon.

Why?—Because they do not hold tight enough.

That is not because they have a screw?—No, because they are poor make and because they cannot be properly sterilised.

I suppose you have tried to recover your fee from Mrs. Crotch?—Yes.

Several times?—Yes.

Do you know whether the clinic has been paid?—I do not know exactly.

You have said that the process of cicatrisation to which you have referred must take some time?—Yes.

But of course you have no experience of how long it will take?—It certainly took a very long time.

But you have no previous experience of such a case as this?—I have had experience of foreign bodies in the abdomen, but never a forceps.

But adhesions can form in a few months?—Not identical with those of Mrs. Crotch.

When you examined Mrs. Crotch on the 12th of September, 1928, you had no difficulty on palpation in diagnosing something hard in the abdomen, and the presence of an obstacle in the passage of matter?—I had to palpate for half an hour.

You say in your report that on the left one can easily locate the intestinal loops, whilst it is impossible to do this on the right side. That pointed to something abnormal?—Yes.

And as a result of your examination did you advise her to have an X ray photograph taken as soon as possible?—I insisted on it.

It would have been a breach of your duty if you had not insisted on it, would it not?—Yes.

Dr. Fay said this in his evidence.—Dr. Fay made his diagnosis after I had told him of mine. It was I who brought the patient to him and told him my diagnosis, and so it was easy for him.

You had diagnosed something hard in the abdomen?—Yes, I diagnosed a foreign body in the abdomen. I told Mrs. Crotch, before the X ray, that it was either a surgical instrument or an intestinal parasite.

Mr. MORRIS did not re-examine.

Dr. ALFRED MARIE VADON, residing at No. 45 Bd. Victor Hugo, Nice, having been first duly sworn by me, was examined by Mr. MORRIS on behalf of the Plaintiff.

Have you translated Exhibit "A," and is Exhibit "H" your translation?—Yes.

Have you translated Exhibit "F," and is Exhibit "I" your translation?—Yes.

Have you translated Exhibit "G," and is Exhibit "J" your translation?—Yes.

Mr. DICKENS did not cross-examine.

The examination concluded at 5.15 P.M. on the 21st of January, 1930.

[TRANSLATIONS].

Translation of reports of Plaintiff's witnesses examined at Nice, exhibited on taking their depositions as part of their evidence.

Translation EXHIBIT "H."

THE doctors signing below:—Doctor MAESTRACCI, former House Surgeon on the hospitals of Paris, and Laureate of the Faculty, residing at Vence, Twelve Avenue Henri Isnard; Doctor Henry Fay, of the Faculty of Paris, Assistant Surgeon of the Hospitals of Nice, residing at Twenty Rue de la Buffa at Nice, certify that they operated on this day, twenty-seventh September, One thousand nine hundred and twenty-eight, at the Clinique Ste. Marguerite, at Nice, Two Rue Mantega, on Madame Martha Crotch, forty-eight years of age, residing at Vence, Place du Peyre.

General anæsthesia by ether was carried out by Dr. MAESTRACCI.

Mr. ESTAVE, House Surgeon of the Nice Hospitals, acted as assistant to Dr. FAY, who operated.

Median sub-umbilical laparotomy going from the pubis to the umbilicus, circumscribing an old laparotomy scar.

In examination of the abdominal cavity one found first numerous very close adhesions of the small intestines between themselves and of some of them with the vesical dome. These adhesions were so intimate that there appears to be a fusion of the intestinal walls between themselves and with the bladder. In order to liberate them, it would be necessary to open the intestinal and vesical cavities and to carry out multiple resections. In view of such destruction the idea of liberating these adhesions was abandoned and one set to work simply to extract the forcipressure forceps which the X ray photograph revealed to be in the lower half of the abdomen, the point directed towards the small pelvis.

As a matter of fact these forceps could be felt through the agglutinated intestinal loops. But it was impossible to extract it freely because it was surrounded on all hands by the intestines and the opaque membranes which connect these intestinal loops. It appeared to be enclosed in a closed cavity. By oscillating it, it was possible to bring its rings into the field of operation. One then found that the forceps is right inside the small intestine and that it is free in its cavity. It occupies a point in the small intestines which one may locate almost halfway between the duodenum and the ileo-cæcal valve.

At the level of the rings of the forceps, the intestinal wall, forming hernia, has become very thin, distended as it is by the width of these rings.

It was exteriorised as far as possible, and, between two Chaput forceps which raised it, this wall was incised for a length of about six centimetres. Through the opening made in this way into the intestines, it was then easy to withdraw the forceps, which, moreover, came away with the greatest possible ease.

It was thus found that it was absolutely free in the intestinal tube.

However, there existed a frenulum absolutely comparable to a round ligament in appearance and dimensions as to thickness, going from one wall of the intestine to the other, and which passed through one of the rings of the forceps which was thus, as it were, suspended in the interior of the intestinal tube. It was necessary to cut this frenulum in order to be able to withdraw the forceps.

The latter was partially surrounded with fæcal matter, on one of the rings this had accumulated and calcified, forming a veritable fecalome.

Closing of the intestinal incision with linen thread in two planes: one total plane and one sero-serous.

Closing of the abdominal wall in one plane with bronze wire, after having put in place a large rubber drainage-tube, the deep aperture of which answered to the point where the intestine had been opened and sutured.

The extracted forceps, half corroded but still solid, is completely rusted, no longer having any trace of nickel plating. Its jaws are joined, but it is not closed. It measures exactly thirteen centimetres in length. The branches of the forceps are not dismountable, but fixed by a screw.

It is impossible to decipher any mark at all on the forceps.

One can only affirm that it is not a forceps either of Kocher or of Pean.

Besides the old laparotomy scar, Madam Crotch had and still has a long parallel scar on the right costal edge. This scar is due to an operation for cholecystectomy which Madam Crotch underwent at Nice two years ago.

EXECUTED at Nice, on Twenty-seventh September, One thousand nine hundred and twenty-eight.

(*Signed*) D. MAESTRACCI. (*Signed*) H. FAY.

Translation EXHIBIT " I."

Dr. L. PRAT, 24, Avenue des Fleurs, Nice.

On the 8th June, 1926, I operated on Madame Crotch for accidents of acute Cholecystitis. My operation only related to the sub-hepatic region. There were quite a number of vesicular-mesocolic adhesions. The exeresis of the retracted thickened vesicle, which was extremely adherent, was troublesome.

I noted by the symptoms presented by the patient on the level of an old laparotomy scar the existence of a swelling which I considered to be an eventration (illegible) with epiploical adhesions. But the serious hepatic condition of the patient imposed upon me a limitation in my intervention to the vesicular zone and I did not explore the abdomen. The patient shows me to-day a hæmostatic pair of forceps which was removed from her subsequently to an operation from the pelvic region. These forceps, which are considerably rusted, are not of the French model which I make use of. They are in particular with a screw, whereas all my French forceps are hinged and are of the so-called Collin type, which can be taken to pieces.

NICE, 17th December, 1928.

Dr. L. PRAT.

Translation EXHIBIT " J." H.E.84917.

Stamped Paper Frs. 3·60.

I, the undersigned, D. MAESTRACCI, Doctor in Medicine, formerly House Surgeon, Laureate of the Faculty of Paris, do hereby declare :—

That on 12th September, 1928, I examined in my consulting room at 12, Avenue Henri Isnard-Vence, Madame Martha Crotch, 48 years of age, residing at Place du Peyre, Vence.

Madame Crotch came to consult me on account of fearful abdominal pains, re-acting on the bladder, occasioning, with urinary incontinence, an intense discomfort of defæcation, and accompanied by frequent flatulant, abundant discharges in sheets, issuing both from the rectum and the mouth, and at the same time with a persistent metallic taste in the mouth.

Characteristic fact : the pains and flatulant discharges are accentuated in the upright position, or when the patient makes a rather sudden movement, bringing the abdominal muscles into play.

Madame Crotch told me that eight years ago in London she underwent a first surgical operation for multiple cysts on the ovaries, which occasioned total hysterectomy and a second operation for cholecystitis; eight days ago, at Nice, she underwent, without result, three high frequency treatments for vesical polypus. She dates back the origin of her trouble to 1920, a short time, she says, after her first operation.

(*Second operation done at Nice two years ago.*)

Examination of the Patient.

The abdomen of the patient shows two surgical scars, one sub-umbilical, which is old, trace of the first operation; the other of more recent origin, supra-umbilical, transverse, parallel to the lower edge of the liver, trace of the second operation.

This abdomen is voluminous, distended; notably more voluminous and appearing tumefied at the level of its right half.

On percussion.—One limits on the right an abnormal area of dullness, having a rectangular form, and extending from the hypochondrium as far as the liver.

On the left nothing to point out.

On palpation.—On the right it is exceedingly painful, with resistance of the wall.

On the left, this wall is more supple and mobile : one can easily locate the intestinal loops, whilst it is impossible to do this on the right side, and one remarks that pressing back the flatus on the left side of the transverse colon and of the descending colon causes pains in the right side of the abdomen, which are particularly severe at a point situated a little below the McBurney point and followed by flatulant discharge from the mouth and the rectum which give distinct relief.

On deep palpation.—The bladder and the right ureter are also painful (positive points of Bazil).

One has clearly the impression of an obstacle in the passage of matter with a peritoneal reaction, which is more marked round a point corresponding to the point previously mentioned.

All these troubles are accompanied by fever with general discomfort, generalised abdominal pains, and severe thirst caused by a persistent metallic taste.

Purely symptomatic treatment is prescribed, ice on the abdomen, intestinal disinfection, with appropriate diet, and an X ray photograph is asked for, which was taken at Nice by Dr. Daviot and which reveals a hæmostatic forceps in the small bassin (the negatives are, moreover, in the possession of the patient).

The symptoms not improving in spite of the treatment, surgical intervention is advised.

In faith whereof, I deliver the present certificate to serve for whomsoever it may concern.

EXECUTED at Vence, 15th October, 1928.

D. MAESTRACCI.

CASE FOR THE DEFENDANT.

Mr. RAYNER GODDARD, K.C., for the defence, submitted that the action was barred by the Statute of Limitations, when counsel for the plaintiff argued that plaintiff had shown no lack of diligence, having been to expert after expert to ascertain the reason of the prolonged pain, while, when the forceps were discovered she took immediate action.

Legal points having been discussed, Mr. Goddard stated that Mr. Miles was anxious to be given an opportunity for making a statement, whereupon His Lordship said that decision on the points raised could be postponed until after the evidence was completed.

Mr. Goddard, addressing the jury for the defence, called attention to the difficulties arising out of the lapse of time, such as fallibility of memory, destruction of documents, and death of witnesses ; for example, he said, a vital witness for Mr. Miles—namely, the theatre sister at the time of the operation, was among those who had died. He pointed out that since the operation in 1920 a further operation upon the plaintiff had been conducted by a French surgeon at the Belvedere Clinic, Nice, who admitted that in his cases nobody counted the instruments or swabs after operation. Following Mr. Miles's operation the plaintiff had gone from surgeon to surgeon, none of whom had discovered the forceps in the abdomen ; whereas, after the operation in Nice the source of the trouble had been detected. He asked the jury to consider it an irresistible inference that the forceps had been left in the plaintiff's body at the second operation. Counsel further said that Mr. Miles did not use forceps of the type found in Mrs. Crotch's body, but when operating in the abdomen he used a completely different type known as " Bulldog forceps," and he emphasised a system which Mr. Miles had devised of using instruments in multiples of three as a guide to the theatre sister in counting them.

At the suggestion of the Lord Chief Justice, Mr. Goddard dealt with the responsibility as between theatre sister and operating surgeon of counting the instruments, and quoted a case, where a swab had remained behind, to show that a surgeon was entitled to rely on the sister in this matter. Mr. Goddard quoted the following case, saying : " In the Supreme Court of South Africa it has been held expressly by the Court of Appeal that a surgeon is entitled to rely upon the sister, and that if the Court is satisfied that he did take reasonable precautions and asked the sister if the count was correct, that then the fact that a forceps is found is not evidence of negligence against him. In the South African case a swab had been left, but I do not know that there is any distinction in law between forceps and swabs. The case is, Van Wyk *v.* Lewis reported in 1924 Appeal Division South African Reports, page 438. May I read the head-note to your Lordship ? "

The Defendant, a surgeon, performed an urgent and difficult abdominal operation upon the plaintiff. The operation took

place in the hospital at night and the defendant was assisted by an anæsthetist and a qualified nurse on the hospital staff to act as his theatre sister. At the conclusion of the operation one of the swabs used by the defendant was overlooked and remained in the Plaintiff's body, from which it passed after a lapse of twelve months. The evidence showed that in accordance with the usual practice at the hospital the defendant had relied upon the sister to count and check the swabs used, that at the conclusion of the operation he made as careful a search as the critical condition of the patient permitted and that both he and the sister believed that all the swabs were accounted for before the wound was sewn up. In an action for damages for negligence in failing to remove the swab, held that negligence could not be inferred from the mere fact that the accident happened but that the onus of establishing negligence lay on the Plaintiff. Further, that although the surgeon performing the operation was bound to exercise all reasonable and proper care as it was a reasonable and proper practice to leave the duty of checking the swabs to the theatre sister the defendant was not guilty of negligence.

THE LORD CHIEF JUSTICE. Did the case end there?—Yes, my Lord.

MR. WILLIAM ERNEST MILES.

Examined by Mr. RAYNER GODDARD.

Are you a Fellow of the Royal College of Surgeons?—I am.

Are you Surgeon to the Croydon Hospital for Diseases of the Rectum?—Yes.

And are you Surgeon to the Cancer Hospital, Brompton?—I am now Emeritus Surgeon to the Cancer Hospital.

That is a special post which I think was created for you?—Yes, last year.

Are you, among other appointments, Consulting Surgeon to the Royal Hospital at Richmond?—I am.

And to various other hospitals?—Yes.

You are a Fellow of the Medical Society and the Royal Society of Medicine?—Yes.

And are you the author of various works which are regarded now as standard works in the profession?—Yes, books and papers.

Have you on several occasions conducted operations at Dr. Wadd's Hydro at Richmond?—On many occasions.

Were you acquainted with the staff at that Hydro in 1920?—Yes.

Did you know the theatre sister?—Yes, I knew her.

Was she a competent person?—I thought so.

And had she assisted at several operations for you?—Before the operation in question, before 1920, yes.

I suppose since November, 1920, you have performed many hundreds of operations?—Yes.

Do you remember the operation on Mrs. Crotch?—I have a slight remembrance of it. I cannot remember actual details except in some points, but in some cases an impression is made upon your mind of the features of a case which are, of course, lasting.

What particular feature of Mrs. Crotch's case remains in your mind?—That the fibroid tumour of her uterus was adherent to the surrounding tissues which was evidence of pre-existing peritoneal inflammation.

Do you remember the patient herself? Was she a good subject for operation?—She was stout.

Do you remember anything taking place during the operation, any communication from the anæsthetist about the patient?—Towards the end of the operation, yes. The anæsthetist said that the patient's condition was such that the operation should be completed as soon as possible.

Why was that?—Well, the pulse was beginning o fail and the breathing was not too good.

There was a danger of collapse, you mean?—Precisely.

Before you go down to the Home where you are going to perform your operation how do you arrange your instruments?—At that time I indicated to Miss Ruddock what instruments I required. I always take the same number of instruments for every abdominal operation, the only variation being special instruments to meet special requirements.

How are your instruments collected together?—The instruments were all put out, and then I myself saw them and packed them into a special box which I had specially made, a box about 10 inches long, 5 inches broad, and 4 inches deep, and this box was perforated with holes so that it could be used, if necessary, as the tray of a steriliser. With that box I always have the same number of instruments, six small pressure forceps, commonly known as Spencer-Wells, six Cocker's forceps, six Bulldog forceps, nine tissue forceps, then three scissors, and three special instruments, all in threes or multiples of three.

Had you any special purpose or design in thus arranging your instruments in threes or multiples of three?—Yes, many years ago, at the outset of my surgical career, I devised that method for this simple purpose, as it is commonly known that anyone can count three but not more than three at a glance. Also that if in threes, or multiples of three, any other number shows that it is wrong. Twos, fives, and sevens are wrong: threes, sixes, and nines are correct.

You mean at the end of the operation?—At the end of the operation.

Are surgeons aware that there is danger of an instrument getting concealed?—Certainly. Cases have from time to time occurred.

And is it to guard against that that you devised this scheme?—Precisely.

When you get to the scene of the operation what do you do with the instruments?—Take my bag up to the theatre and then hand over the instruments to the theatre sister. I count the instruments out to the theatre sister and show her that they are in threes and multiples of three.

Does she sterilise them?—The theatre sister sterilises them and lays them out on the special table relegated for the instruments.

Is that done while you are rendering yourself aseptic?—Yes, generally washing up and putting on the sterile gown, mask, gloves, and so on.

We have got to the point that you count out the instruments in the presence of the sister. We may go now and follow along the stage of the operation. In an abdominal operation of this description, what is the first step that you take on the patient after he or she is anæsthetised?—I first of all make the incision. In this case it was from the umbilicus to the pubis in the middle line, what is called a median sub-umbilical incision. It goes through the skin and subcutaneous and fatty tissue first of all. There are three or four bleeding points, as a rule, with that incision. I use Spencer-Wells 5-inch pressure forceps to seize those vessels to enable me to tie them. I generally do the tying and my assistant removes the forceps after the vessel has been tied. Occasionally, if it is more get-at-able, I hold the forceps and my assistant ties the vessel. It may so happen that it is easier for one to do it than the other.

When the vessel is tied what is done with the forceps?—The forceps are put on one side. Then the next incision is made through the sheath of the rectus, usually in these cases the right rectus muscle. That is a long strap muscle extending from the pubis to the ensiform cartilage and the lower part of the ribs. We avoid, if possible, dividing muscle.

Does bleeding occur in that part of the operation?—Yes, there may be two or three vessels bleeding there which require picking up with small pressure forceps. Then they are tied and the pressure forceps are removed.

What is the next stage?—The next stage of the operation is to shut off fatty tissues and the sheath of the rectus muscle. I use Cripps's swabs, and I clip these with what is known as Moynihan towel clips.

THE LORD CHIEF JUSTICE. Is Cripps the name of a man?

THE WITNESS. The instrument is named after a surgeon inventor. Then you fix those to the sheath

of the rectus muscle on either side with three Moynihan towel clips.

Mr. RAYNER GODDARD. By the time you come to that are such Spencer-Wells forceps as you have been using removed from the patient's body?—Everything must be removed in order to enable you to shut off the wound in that kind of way. There can be nothing remaining on the wound that you have already made.

THE LORD CHIEF JUSTICE. Do you mean you could not perform this stage of the operation unless they were removed?—No, you could not place the swabs in position unless the forceps had been removed. The next stage of the operation is incising the peritoneum, which is bloodless and requires no hæmostasis.

Does that mean stopping the bleeding?—Yes, my Lord. The next step is to place a self-retaining abdominal retractor.

Mr. RAYNER GODDARD. That is an instrument to hold the wound apart?—Yes, just like my two fingers like *that* pulled apart so as to thoroughly expose the field of your prospective operation.

Are you now in a position to deal with the uterus?—In this particular case there was a large tumour very nearly about the size of my head. Directly you open the wound there is the tumour in front of you. All intestines have been pushed away by the tumour which arises out of the pelvis.

Do you use or have you ever used in this operation a Spencer-Wells forceps in the abdominal cavity?—I have been performing abdominal operations for thirty years, and I can say quite emphatically and confidently I have never used a pair of small 5-inch Spencer-Wells forceps in an operation of this kind for the removal of the uterus.

How do you deal in this operation, then, with any bleeding points that may arise inside the cavity?—In order to remove the uterus there are six vessels to tie. There is an ovarian vessel on either side, an artery and a vein running in the free edge of the broad ligament. Then on either side there is a vessel in the round ligament which is a branch of the deep epigastric artery, and there is on either side the uterine artery which supplies the uterus. I have never placed a pair of forceps on any of those vessels. I under-run each of them with an instrument known as a Reverdin needle-holder, a French instrument and a very excellent instrument. It has an aneurysm needle attachment. You can put a cutting needle or an aneurysmal needle into the holder. For this purpose I use the aneurysmal needle. Passing the ligatures round these six vessels they are thus tied off before the vessels are severed. Therefore there is no bleeding.

THE LORD CHIEF JUSTICE. Would you repeat what you said, beginning with the word "passing?"—Passing the aneurysm needle beneath these six vessels I withdraw the ligature under each vessel and tie it. Each vessel is tied before it is divided, so that there is no bleeding.

Mr. RAYNER GODDARD. Is there any other part of the operation in which you use a Spencer-Wells forceps?—None whatever.

Do you ever have a Spencer-Wells forceps on the body of a patient who is about to undergo this operation after the peritoneum is severed?—Never.

You told us about the tying off of the six vesssels in the abdomen. Are there adhesions, do you find, in these cases?—In a great many cases there are none, but in this particular case there were many adhesions.

How did you deal with those?—One breaks down adhesions by sweeping one's hand round the tumour. The tumour is generally adherent, or it was in this case adherent, to the pelvic wall. Also there were some adhesions to the omentum, that is a structure hanging from the stomach.

You do that with your hand and without an instrument?—Yes.

After the uterus and the tubes have been dissected and removed are you ready then to begin to close the wound?—After the tumour itself has been removed?

Yes?—You see, in this operation it has been mentioned that it was a total hysterotomy. That is not my recollection; it was a sub-total hysterotomy, and a total hysterotomy does not necessarily mean removal of the ovaries. In this case I removed the left ovary and tube because they were matted together with the tumour by old pre-existing inflammation.

THE LORD CHIEF JUSTICE. You say this was not total but sub-total hysterotomy?—Yes.

Then you went on to add something?—I only removed, in this case, the left ovary and Fallopian tube.

Did you remove the uterus?—Yes.

All the uterus?—Yes, the uterus together, with that Fallopian tube, so that when the uterus was removed all that was left was what is known as the supra-vaginal surface.

Mr. RAYNER GODDARD. Are there two anatomical portions of the body called the round ligament and the broad ligament?—Yes. The round ligament is embryologically and anatomically quite distinct from the broad ligament. One is a fibro-muscular band.

I only want to know, are the round ligament and the broad ligament two perfectly distinct things?—Two totally distinct things.

Dr. Maestracci in his evidence referred to the round ligament, and said it was also called the broad ligament?—He is entirely wrong. I know one of the best text-books in French, Tatu's text-book on Anatomy, and he is very distinct on the point.

It was also said by Dr. Maestracci that he found a portion of this ligament jutting through the ring of the forceps. Will you tell me, first of all, what happened to the round ligament and the broad ligament after the uterus had been dissected?—The round ligament has very definite anatomical relations. It is attached to the upper part of the uterus immediately in front of and below the entrance of the Fallopian tube. It passes out under cover of the peritoneum between the layers of the broad ligament and leaves the abdomen at a given anatomical point. That anatomical point is the internal abdominal ring, and the internal abdominal ring is a point midway between the anterior superior spine of the ilium and the spine of the pubis.

I want to know what you did with this ligament. That is all I want to know?—The round ligament is divided close to the brim of the pelvis so that the greater part of the abdominal portion of it is removed with the uterus. The stump, which is never more than an inch in length, is always buried when the peritoneum is sutured, and for this reason, that anatomically the round ligament lies beneath the peritoneum.

You bury it?—Yes.

And is it sewn down?—Absolutely.

In the peritoneum?—Beneath the peritoneum.

And what becomes of what is left of the broad ligament?—The broad ligament practically does not exist after it has been divided. It is only a double fold of the peritoneum and when you sew its margins together that completes the sewing of the peritoneum.

Is it possible for the remnant either of the round ligament or the broad ligament, anatomically speaking, to have been through the rings of these forceps found where the X ray photograph shows they were found?—No, for two reasons. One is that when the peritoneum is sewn it is a flush surface, and the free end of the round ligament is buried beneath it. Another reason is that if that round ligament had been through the ring of the forceps the ring of the forceps would have to lay at a definite anatomical point which would be shown five inches lower than it is shown in the X ray photograph.

Would the forceps have been laying with their point down or the point up?—They could not lie with the point down because, with the ring at that level, you would have to perforate the bottom of the pelvis.

After you have dissected the uterus and sewn up those ligaments does a period come when you are

ready to sew up the patient?—Yes. There is the stump of the uterus left which is the supravaginal surface. I use Kocher's forceps and my assistant holds them up so that the stump is brought up out of the depths within reach, and I then sew with a round curved needle.

Is a Kocher's forceps anything like a Spencer-Wells?—Not a bit. These are the forceps invented by Professor Kocher, of Berne, Switzerland. They serve the purpose of a pressure forceps, but they have a tooth at the end so that you can catch hold of a thing and it does not let go. That is Kocher's forceps as distinct from a Spencer-Wells forceps. (*Exhibiting.*)

THE LORD CHIEF JUSTICE. Perhaps the jury would like to see them.

Mr. RAYNER GODDARD. May I at the same time hand the jury a 5-inch Spencer-Wells? (*Forceps handed to the Jury.*)

What is the length of the Kocher forceps?—About 5½ inches to 6 inches, I should think. It has a ratchet there. It is very different from the Spencer-Wells; it is to increase the pressure.

Who holds the Kocher forceps?—My assistant.

Who was your assistant in this case?—Dr. Wadd.

THE LORD CHIEF JUSTICE. Two pairs apparently?—Yes, two pairs; one anteriorly and one posteriorly.

And he holds them in that way so as to bring up and expose for sewing what?—To bring within reach the stump of the uterus. We call that the supravaginal surface.

Mr. RAYNER GODDARD. Could you perform with Spencer-Wells forceps what you have to do with Kocher's forceps?—No; for two reasons, one that they would be too short to reach, and another that they would slip up because they have not got that spike in the end, and the uterine tissue is very tough.

During this operation what has become of, or what do you do with, the intestine?—The small intestine is packed off into the upper abdomen by means of a Cripps' swab; at least, that is what I use. Some surgeons use a sterile towel; others use a gauze swab. I prefer the Cripps' swab.

Is that something in the nature of a handkerchief or towel?—About the size of a handkerchief, of a special texture.

Who hands you the swabs from time to time?—If there is an assistant nurse in the theatre, then she generally hands the swabs, provided that she is a clean nurse.

You mean a sterilised nurse?—Yes. It is a technical term; clean as opposed to dirty.

One who has been sterilised for the operation?—That is right.

If there is a sterilised nurse present she hands you the towels?—Yes.

Otherwise, who does?—The swabs you mean?

Yes?—The theatre sister if there is no sterilised assistant nurse present.

It is either the nurse or the sister?—Or the sister.

When you get to the stage when you can sew up the patient, what happens?—I make a practice of asking the theatre sister to give me four Kocher's forceps.

THE LORD CHIEF JUSTICE. Do you use the terms "nursing sister" and "theatre sister" as meaning the same person?—The sister and the theatre sister are the same, and the other is generally spoken of as the theatre nurse.

You use now the expression "nursing sister." Who is she?—What I meant, my Lord, was the theatre sister. I ask for four Kocher's forceps, which are handed to me, and usually at that time the theatre sister indicates that she is correct in her instruments; and if she does not, and I do not see for myself—at a glance I can generally tell—then I ask the question if all is correct.

THE LORD CHIEF JUSTICE. Will you mind repeating that last statement?—Usually at that time I ask for four Kocher's forceps. Those are handed to me. At that time the theatre sister usually indicates that she is correct—I mean by that that her instruments and swabs are correct. She may do so in a variety of ways: she may say: "You have a pair of scissors" or "a pair of dissecting forceps," or she may say that she is short of a particular instrument, or more than one. That is an indication to me that she is correct, and if I get no such indication I ask if all is correct.

Mr. RAYNER GODDARD. If I heard you aright, I did not quite follow one thing. You said she may say: "I am short of one"?—Yes.

Then you said: "That indicates that she is correct"?—Then I have to find it. Sometimes a thing may get hidden in a towel.

THE LORD CHIEF JUSTICE. And when she says these things which you mention, to whom is she saying them?—She is saying them to me.

Mr. RAYNER GODDARD. Can you keep count yourself of the various things that you are using?—No, and I do not attempt to; but with my system of three and multiples of three I can just glance at a thing and see. I know what is happening; at any rate, I know whether the theatre sister is counting the instruments during the operation, which she ought to.

On whom do you rely for the counting of the instruments?—On the theatre sister.

Is that in any way peculiar to yourself, or is that the accepted method in modern surgery?—No. That is the accepted method in all hospitals.

Are theatre sisters trained in this respect?—Very carefully.

In your judgment, would it or would it not be in the interests of the patient if the surgeon relied upon himself to count and check the instruments?—It would be absolutely impossible for the surgeon to go about trying to find or count up instruments.

THE LORD CHIEF JUSTICE. Impossible for the surgeon to do what?—To hunt around for a supposed missing instrument or swab. He would be exposing the patient to greater risk by delaying the operation.

Mr. RAYNER GODDARD. But if the instrument is reported as missing, what do you do then?—Then it has to be looked for. Then I have to satisfy myself that it is not inside the abdomen.

Could you check the instruments yourself—I do not mean necessarily hunt round for a missing instrument, but at the close of the operation when the patient is ready to be sewn up would it be in the interests of the patient that you yourself should check with your own hand the instruments?—No, it would delay matters.

THE LORD CHIEF JUSTICE. Does it really then come to this, Mr. Miles, that if the theatre sister says that the number is correct you act upon that statement?—I am quite satisfied.

Mr. RAYNER GODDARD. After the patient has been put to bed do you pack up your instruments yourself, or do the nurses do it?—The nurse in the theatre generally washes them; then I have them put out after they have been washed and dried; I myself pack them into my receptacle. In doing so I always count them to see that they are correct.

Have you ever found in the course of your surgical career that your instruments were not right?—I have never missed a pair of forceps—never in the whole of my existence—that is, surgical instruments.

When you get home after an operation to whom do you give your instruments?—Miss Ruddock. Up to about 1925 she used to do this; but that includes 1920. Up to that time she unpacked my bag, took out the instruments, laid them on the table so that I could see them before they were put away, and she counted them.

That is the same lady who packed the bag?—Yes.

You have been telling us, as I understand, about your usual practice in operations. Are you able to say, one way or another, whether you carried out that routine that you have told us of when you operated on Mrs. Crotch?—It is very difficult to remember details of what you did ten years ago, in just the same way as I cannot tell you particularly whether I shaved first or had my bath first on any particular day; but

I usually have a bath and I usually shave, and I am perfectly certain that on any day during the last ten years I have done both. I can only say that I probably carried out the routine which I generally adopt, but specifically I cannot remember each individual instance.

Are you able to say, one way or another, definitely whether you were short of forceps after the operation?—I can say that absolutely definitely.

That you were not?—That I was not.

Did you see Mrs. Crotch in the nursing home before she left?—That is, after the operation?

Yes, after the operation?—Yes, I may have seen her two or three times. I do not know.

Is there anything that remains in your memory, as to whether you can say that the convalescence was other than normal?—I can speak of her convalescence as uninterrupted.

Do you remember anything more about it than that?—Nothing whatever.

Do you as a rule desire to see your patients after they have left the nursing homes?—I always request the patient or request the doctor to ask the patient to see me after an operation at the termination of the convalescence. That is usually done when they have gone down to the sea for three or four weeks; after their return I wish to see them, especially after an abdominal operation, and I like to see them for the express purpose of seeing whether their scar is sound.

You know Mrs. Crotch came to you on the 10th May, 1921?—She did.

Was that earlier or later than you expected to see her?—Very much later, because I had arranged with Dr. Wadd that she should come at the termination of a three- or four-weeks' convalescence.

Did she give you some explanation of the delay? You need not go into it?—She had some domestic trouble.

What recollection have you of your interview with her in May, 1921?—When she came to my house, of course I sent her into the derobing room. Next to my consulting room is a small room with a couch where a patient can get undressed. After the preliminaries of conversation I sent her in there. I am quite certain, although I cannot actually remember it, that I examined her. I always put patients through definite tests.

She said you made her cough?—Yes. I do everyone. To see whether the scar is sound. I say "Cough," to see whether there is any herniation.

We know from Dr. Stevens, who saw her in the following September, that at the time he saw her there was a hernia?—I heard him say that.

So far as you have any recollection, was there any hernia when you saw her?—To the best of my recollection there was none; and I say so because if there had been I should have immediately reported it to Dr. Wadd, whose patient Mrs. Crotch was; she was not my patient beyond the fact that I operated on her. She was his patient.

You mean that she is your patient for the operation. After that she is the doctor's and not the surgeon's?—Yes. After that I had finished, and she had no right to come to me without Dr. Wadd, unless he sent her.

I think the Plaintiff said in her evidence that you told her that the lump——

THE LORD CHIEF JUSTICE. What she said was this, Mr. Rayner Goddard: I will read it to you: "I came to see the Defendant in May, 1921. I told him I was seedy and worried, and could not understand why I had the lump; and he said to me: 'Well, let us have a look.'" Have you any recollection of that?—I have no recollection at all of her saying anything about a lump.

Then she said this: "He examined me thoroughly, saw the lump, pressed it, made me cough several times, and then said: 'Now, don't worry; you will not need to have another operation'; and that because I had expressed the fear that I might have to undergo another operation. He said that the cause of the lump was some injury in the course of the operation of the muscle of the abdomen, and that I need not worry." Have you any recollection of that?—No recollection at all. I cannot conceive that I should say that she would have an injury to the muscles of her abdomen, because it would have been absurd.

Then she went on to say: "I said: 'You are certain that I have not got another growth,' and the Defendant said he was certain. 'I cannot see,' he said, 'how you can possibly have another growth, as there is nothing for it to grow to.' He said that I had not had a fair chance since the operation, and that I would get well with rest and care. I think he prescribed some medicine. My mind was relieved. He said that I must not expect to get over an operation of that kind in less than a year." Do you recollect any part of all that?—No. I cannot recollect the details of the conversation, but I am quite certain I never said that there was nothing for a tumour to grow to, because that would have been an utterly ridiculous thing to say. If I said anything of the kind I should have said: "nothing to grow from," not "nothing to grow to."

Can you say aye or no did you see a lump?—I have no recollection whatever of seeing a lump. I am quite positive about that.

Mr. RAYNER GODDARD. Did you write to her doctor?—I believe I telephoned to Dr. Wadd; I do not think I actually wrote to him, but I think I telephoned him to say that I had seen Mrs. Crotch.

Supposing there had been a lump there, what would have been the treatment you would have ordered?—First of all, I should have formed an opinion as to the character of the lump. The most likely thing would have been a hernia.

Assume that it was, as Dr. Stevens said he afterwards saw, a hernia; what treatment would you have given?—Then I should have suggested wearing a truss or a belt.

Do you agree with Dr. Stevens that this is a common thing after abdominal operations?—Very often, after an abdominal operation on a fat subject. Surgeons differ from ordinary mechanics. We have to deal with what we are given, what the patient provides us with; we do not choose it like the man who makes a house.

Is there any danger in the hernia?—Not unless it becomes big and becomes strangulated. If there is a hernia you use a truss to protect it, because you might get a strangulated hernia.

THE LORD CHIEF JUSTICE. What is a strangulated hernia?—When a portion of the intestine thrusts itself through a small opening, and the neck of the opening becomes tight and cuts off the blood vessels—strangulates them.

Mr. RAYNER GODDARD. Dr. Stevens told us that in September of 1924, when he was consulted by this lady and found that she had got this lump, she was also complaining of some pain in the lower abdomen. Would that surprise you?—I do not see why she should, because there was no connexion between the ventral hernia and pain in the lower abdomen particularly.

Is there anything after an abdominal operation which may cause any pain in the patient from time to time?—Sometimes adhesions. Now this patient had very extensive adhesions to her uterus, which, as I said, was evidence of pre-existing inflammation. She probably may have got adhesions to the part where the adhesions were separated. That is a very common thing to have.

At any rate, there was no further reference of the patient or by the patient to you?—None whatever.

You remember, I think, that a friend of hers came to see you in July, 1924, but have you any recollection of her coming with the friend?—Mrs. Crotch either wrote or telephoned—I cannot tell which—that she wished to bring a friend of hers to consult me, and she did bring the patient. She brought the patient to my present address. I examined the patient and she paid her fee, but I did not examine Mrs. Crotch.

Mrs. Crotch, I think, says that she did not say more than that she was seedy——

THE LORD CHIEF JUSTICE. What she said was this: "Incidentally, the Defendant said to me: 'You do not look very well; you look very poorly,' and I said, 'Oh, I am always seedy.' He examined my friend and told me she had cancer. This alarmed me because of my own state, but he said to me, 'Don't you worry; you are all right.'" Do you recollect anything of that?—No, I do not recollect the details of that.

THE LORD CHIEF JUSTICE. She went on to say: "I did not ask him to look at my lump, nor did he."

Mr. RAYNER GODDARD. I want to ask you now about two or three matters which have arisen from what you have heard of the medical history since 1921. She has told us that when she went to India she had dysentery?—Yes, I heard that.

And, I think, malaria. So far as you can speak, could the presence of a foreign body in the intestine have caused dysentery?—Certainly not. Dysentery is due to a definite amœba.

What is that—a germ?—It is an organism.

Could there be any connexion between dysentery and gall-bladder trouble?—Oh, yes. Dysentery leads to an ulceration of the rectum and colon, chiefly the rectum, and you may get as a sequel to that gall-bladder inflammation, cholecystitis—quite a well-recognised possibility.

THE LORD CHIEF JUSTICE. Although the presence of forceps might not directly cause dysentery, might they set up an internal condition which in its turn might develop into dysentery?—I do not think so, because dysentery is a specific disease.

Mr. RAYNER GODDARD. You have heard also Dr. Prat's evidence that when he operated on the bladder for gall-stone he noticed at the site of your operation a swelling which he took to be a hernia of some sort?—Yes.

Is that consistent with Dr. Stevens's evidence in your opinion?—I think so—probably one and the same thing.

Would forceps in the intestine where you know they were found be indicated by a lump—I mean the sort of lump which Dr. Prat described? Can you form any opinion upon that?—I can imagine that a pair of forceps among the intestines would produce a tumour.

A tumour?—A tumefaction, at any rate.

THE LORD CHIEF JUSTICE. A swelling?—Yes.

Mr. RAYNER GODDARD. Would that be an external swelling like hernia?—Oh, no.

What would be the difference?—It would be inside the abdomen among the intestines: it would not be extruding through the abdominal wall like a hernia.

How would you discover it: by palpation or by observation?—You mean to discover a pair of forceps in an abdomen?

Yes?—By X rays.

THE LORD CHIEF JUSTICE. "Palpation" means handling, does it?—Yes, feeling in *that* way (demonstrating).

Mr. RAYNER GODDARD. Would you see anything on the outside or would you have to handle the patient?—No; you would have to palpate very carefully. If they were deeply down in a fat abdomen you would not feel anything at all.

Would you deal with one matter. (X ray photograph and chart handed to the Witness.) Has Dr. Fay marked the position of the forceps in accordance with the position shown in the X ray photograph?—That is on the diagram?

Yes?—Yes, he has marked it there.

Does that correspond with the X ray photograph?—No. Where he has marked it the forceps lie longitudinally and parallel to the middle line, whereas in the X ray they are obliquely placed and to the right. *This* is dead in the middle line parallel with the middle line.

The X ray photograph—the other photograph—of course, shows them underneath the incision made by Dr. Prat?—Yes, on the right side.

There is no question from that photograph that they are in the neighbourhood of the scar that your operation made, is there?—Yes, they are in the abdomen and not in the pelvis. What we call the pelvis is what the French call "le petit bassin," and they are not in "le petit bassin" according to that photograph.

How do they lie in relation to the area with which you dealt?—My incision would be running along *there* in the middle line, and those forceps are well to the right of the middle line. (Demonstrating on the X ray photograph.)

You have just shown us where your incision was. Where is Dr. Prat's mark?—*That* is Dr. Prat's mark across *there*, and mine is straight down the middle line (indicating).

(To be continued.)

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Probv. Surg. Sub-Lt. F. W. Chippindale to be Surg. Sub-Lt.

Surg. Sub-Lt. F. W. Chippindale to be Surg.Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. Storrs, having attained the age for compulsory retirement, is placed on ret. pay.

Maj. and Bt. Lt.-Col. F. D. G. Howell to be Lt.-Col., vice Lt.-Col. R. Storrs to ret. pay.

ARMY DENTAL CORPS.

Lt. R. G. J. Tovey resigns his commn.

TERRITORIAL ARMY.

Lt. D. S. Middleston to be Capt.

Second Lt. C. A. Lindsay (late M.G.C. (Infy.)) to be Lt.

R. Coyte (late Surg. Lt., R.N.), to be Lt.

ROYAL AIR FORCE.

Air Commodore J. McIntyre is appointed Director of Medical Services, Air Ministry.

Flight Lt. R. Thorpe is granted a permanent commission in this rank.

Flying Officer P. B. L. Potter is promoted to the rank of Flight Lt.

Maj. A. A. McMullan (Army Dental Corps) is granted a temporary commission as a Squadron Leader (Dental) on attachment to the R.A.F.

Flight Lt. S. A. McCormack (Capt., Army Dental Corps) relinquishes his temporary commission on return to Army duty.

DEATHS IN THE SERVICES.

Surgeon-Major Alexander Gamack, an old Hon. East India Company's servant and retired member of the Indian Medical Department of the Indian Army, died at his residence at Hampstead in his 97th year on March 8th. The son of William Gamack, a solicitor, of Peterhead, Aberdeenshire, he received his early education at the Academy in that town and later entered at the University of Aberdeen where he graduated M.D. in 1854. In 1856 he became a licentiate of the Royal College of Surgeons of Edinburgh and in the same year joined the H.E.I.C. and became assistant surgeon, reaching the rank of Surgeon-Major after some 20 years' service. He was for a considerable time zillah surgeon and jail superintendent at Madura.

The Air Ministry announces the appointment of Group Captain Henry Cooper, D.S.O., an Honorary Surgeon to the King on relinquishment of this appointment by Air Vice-Marshal David Munro, C.B., C.I.E., who has retired.

POST-GRADUATE COURSE AT WITWATERSRAND UNIVERSITY.—On Feb. 3rd 100 South African doctors arrived at the Medical School of Witwatersrand University, Johannesburg, for a post-graduate course. The course opened with an address by Prof. Raymond Dart and consisted of lectures addressed to practitioners and district surgeons. The course for district surgeons included lectures on public health, hygiene, medico-legal, and post-mortem work. The Union Government has taken an interest in the course and has paid the fees of district surgeons attending as well as providing them with railway travelling warrants. Many more applications were received for the course than could be accepted.

Special Articles.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

New Departures in Health Administration.

AT a recent meeting of the Edinburgh branch of the Institute of Public Administration, Dr. Parlane Kinloch, chief medical officer for the Department of Health, gave a lecture indicating the new developments in health. The effect of the health services in their environmental and curative aspects was illustrated, he said, by a reference to the gradual lengthening of the average span of life from 20 years in the sixteenth century to under 25 years at the close of the eighteenth century, 47 years in 1910, and 56 years in 1928.

"Consider," said Dr. Kinloch, "exactly what the figures mean. They mean, of course, first, that since the beginning of the nineteenth century the average span has been more than doubled. But they mean much more than that. They mean also that life is more vigorous for our people as a whole. Do not be misled by scaremongering articles about interference with nature's laws of the 'survival of the fittest.' What the short but triumphant story of public health reveals is that if we knew enough and could apply what we knew, all children born might survive to a healthful life and a good old age. As it is, with imperfect knowledge imperfectly applied, we can approach closer and closer to that ideal."

He indicated also how the family practitioner, who was still the backbone of medical service, could be brought into organic contact with the new health machinery. A comprehensive domiciliary medical service for the general population might best be obtained by extending the insurance principle to the dependants of insured persons, and possibly also to classes of people like the small shopkeeper who had not hitherto come within its scope.

I learn that plans are afoot for bringing into closer relationship with the public services the whole work of the approved societies. Hitherto the gap between the public medical services and the societies has been very badly bridged. Plans are being considered for a more effective rapport between the available services and the approved societies as well as the insurance committees. It would be very strange if these complicated organisations remained unaffected by the new system of public medical organisation.

Scotland and Medical Education.

The Medical Register for 1930 and the Medical and Dental Students' Register contain some interesting figures. They bring out in a striking way the great proportional part played by the Scottish medical schools in medical education. The peak both in England and in Scotland was reached in 1919, when 1375 students registered in England and 1387 in Scotland. For the ten years following, England's figures were: 1099, 833, 946, 210, 390, 496, 577, 503, 544, 630. Scotland's were: 910, 602, 587, 243, 435, 410, 494, 539, 577, 626. In the totals for the years from 1905 to 1929, England has 16,473, or 41·8 per cent., against Scotland's 14,951, or 37·9 per cent. Since 1923, the low water mark, Scotland has in each of three years actually exceeded England. In 1929 the two countries are nearly equal—630 against 626.

At the graduation end of the curriculum the Scottish proportion is not so great; but even here the smaller country much more than holds its own. On the average of the 20 years ending 1929, 694 graduates entered the English Register; 471 the Scottish. Here Scotland has nearly 68 per cent. of England's figure. In the last five years the average registrations for England were 973 against Scotland's 504, which, however, is about 52 per cent. Again, in 1930, the total on the Medical Register as at Jan. 1st is 54,870. Of this total, 26,314, or 47·9 per cent., entered by the English Register; 17,198, or 31·3 per cent., by the Scottish. This is a substantial preponderance for England; but then England has a population of some 36,000,000; Scotland has not quite 5,000,000.

Population has, perhaps, no very direct relation to medical graduates; but it is at least interesting to note that, while Scotland's registrations are about 3·4 per 1000 of the Scottish population, England's are only 0·73 of the English population.

An Exhibition of Health and Hygiene.

The second Edinburgh health exhibition, promoted by the City of Edinburgh and organised by the medical officer of health, has been opened by Mr. Watson, solicitor-general for Scotland, acting as deputy for the Secretary of State. The Lord Provost took the chair, and the Waverley market was well crowded for the whole afternoon. At the exhibition two years ago, some 120,000 people passed through in the course of ten days. This year's exhibition is to be open for 16 days and, to judge by the popular interest, the previous numbers will be far exceeded. One of the chief attractions is the child welfare section, where one can see a day nursery at work, with infants being fed and managed; an ultra-violet ray section with children undergoing exposure; a day nursery in full activity, and demonstrations of remedial massage. The Edinburgh mothers made a large crowd in this section. They were also keenly interested in the demonstrations of cookery, where working women were cooking their food with working-class fires and appliances. There is an admirable exhibit of foods and they attract much attention. There is a section for irradiated milk, a section on venereal diseases arranged by the British Social Hygiene Council, and an admirable exhibit by the Dental Board. Agriculture is represented by real cowsheds and real cows. Among other striking objects on view are a waterfall, illustrating a modern electric power plant, and a "slum" kitchen and stairhead, which is a masterpiece of realism. The City Corporation deserve the thanks of the whole community of South-Eastern Scotland for this extraordinarily effective effort in health propaganda.

A point made by the Solicitor General in his address was that there should be a closer contact between the experimenting and thinking mind of the medical schools and University, and the trained minds and exhaustive records of the public health department. If there was that collaboration, the experience garnered by the public health department could be used to direct and guide the line of inquiry and practical thought of the academic mind; the experimenting of the academic mind could be tested in the organisation of the public health department.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

A Medical Society Educates the Public.

AT the recent annual joint meeting of the medical societies of New York, Pennsylvania, and New Jersey a full report was presented of popular educational work carried out during the last four years in the last-named State. The work began when a medical executive secretary was appointed by the State Medical Society, one of his several assigned tasks being the inauguration of such a campaign. He began by educating the legislators regarding the claims of cultists—work which is said to have borne good fruit. At the same time lectures were given to lunch clubs such as Rotary and Kiwanis. In the second year the speaking campaign was extended to radio and since then regular 15 minute talks have been broadcast. Copies of broadcast addresses were syndicated to the press. Response to the radio speeches came from as far East as Scotland and as far West as San Diego. In the third year a new factor was added by the formation of the Women's Auxiliary to each county medical society. These societies help (1) by self-education in study groups: (2) by the promotion of the public education campaign

of the medical society; (3) by gifts of dressings and appliances to hospitals and patients; and (4) by securing or donating subscriptions to *Hygeia*, the popular health magazine of the American Medical Association. For the last three years the medical secretary has been assisted by a lay woman who has given all her time to health education. During the year 1928-29 76 addresses were given to an aggregate audience of 6250. Last autumn the campaign entered the schools and in two months (November and December, 1929) no less than 13,288 pupils were addressed.

Untruthful Advertising.

The National Better Business Bureau has made public a stipulation obtained by the Federal Trade Commission from an unnamed corporation selling and distributing cigarettes and other tobacco products. In this document the corporation admits the use of testimonials for advertisement, obtained from "famous people" for a "valuable consideration," to the effect that the products "protect from irritation." The advertisement also contained a testimonial or endorsement supposedly by certain actresses that they remained slender by the use of these particular cigarettes, when as a matter of fact the actresses in question do not smoke cigarettes at all. A statement was broadcast over the radio purporting to come from a well-known musical comedy star and saying that he used these cigarettes when making a certain talking picture. Although he received a consideration for this statement, he had not prepared it or seen it prior to its use. The corporation agrees to state in future when its testimonials have been paid for, this statement to be published conspicuously with the advertisement. In future, also, the corporation will refrain from advertising such statements as "Women retain slender figures" and "Overweight is banished." They also agree that if they should ever resume any of these questionable practices the signed stipulation of facts may be used in evidence against them.

The Control of Venereal Diseases.

Surgeon-General H. S. Cumming recently made a report to Congress on the control of venereal diseases in the United States. This he regards as being still one of our major public health problems. In spite of the decrease in prevalence that has taken place since the world war there are constantly under treatment or observation by physicians approximately 474,000 cases of gonorrhœa and 643,000 cases of syphilis. It is estimated that 697,000 cases of gonorrhœa and 423,000 cases of syphilis seek treatment for new infection in the course of a year. The Public Health Service has sought to control the spread of these infections through coöperation with State and local health authorities by educational work and by research. A recent investigation concerned the incidence of syphilis among negroes in the southern rural districts. A campaign has also been launched for the prevention of venereal disease in the American merchant marine. The Public Health Service is coöperating with the Health Section of The League of Nations.

The Psychoneurotic Aspect of Heart Disease.

At a recent meeting of the New England Heart Association Dr. J. A. P. Millet discussed the problem of psychoneurosis in heart disease. Security is a fundamental need. When it is threatened the patient goes through doubt, fear, and obsessions to anxiety. The heart gives often alarming evidence of its failure to function normally. Therefore the physician must be definite in his prognosis. Any uncertainty that may appear in his mind will be multiplied ten times in the mind of his patient. Too much exercise must not be permitted, but restrictions should not be unnecessarily severe or the patient's anxiety will be increased. The understanding of the physiological basis of his symptoms will often be helpful to the patient. Reports of cured cases will add to his assurance.

Public Health Services.

SCHOOL MEDICAL SERVICE.

—	Number on roll.	Average attendance.	Routine inspection	Special and re-inspection	Percentage of defects.
Taunton	2816	2595	955	2994	14·7
Torquay	3880	3384	1411	5661	23·5

Taunton.

THE school dentist's report which opens the year's review of school medical work at Taunton contains some satisfactory facts and figures. As Mr. A. J. Percy, L.D.S., remarks, it frequently happens that parents are more fearful of dental treatment than the children themselves, and it is encouraging that more and more parents are attending the clinic with their youngsters; the proportion of appointments kept (75 per cent.) is also quite good. The ratio of fillings to extractions of permanent teeth was over 4 to 1. In the general medical report it is seen that coördination is at its maximum, for Dr. John Allen is at once medical officer of health, school medical officer, and medical officer for maternity and child welfare, while the school nurses also act as school attendance officers. Taunton has the advantage of being the site of the orthopædic clinic of the Somerset County Council, and the council's tuberculosis dispensary is open to Taunton cases every Monday. In elementary school equipment improvement is urgently needed, for a supply of drinking water is lacking in several schools, while others still have trough closets. The fact that so many schools had to be closed on exceptionally cold days suggests that the heating arrangements are none too good. In regard to treatment, Dr. Allen gives a list of agencies through which parents may obtain help for their children. An unusually large percentage (3·7) of children were found to need treatment for tonsils and adenoids; most of these obtained it for the most part independently of arrangement with the hospital. The orthopædic clinic with its specialist surgeon, sister and voluntary helpers, continues to do good work. There are no special schools of any kind in the borough, but several children have been sent to residential schools outside. Dr. Allen writes interestingly on the mentally defective and the recommendations of the Departmental Committee. "Certification and notification (when necessary) is now only possible," he says, "for children from 7 to 14, and in some cases up to 16." It would be more exact to say that children under 7 cannot be compelled to attend special schools; they can do so if the parents are willing and if the schools are available, or they may be dealt with under the Act as feeble-minded and neglected. In his list of conditions under which an adolescent defective can be dealt with, he omits alleged "neglect," a section which is not interpreted with unreasonable strictness. But that many difficulties arise from the absence of special school accommodation is only too true.

Torquay.

Dr. T. Dunlop mentions the increasing need of assistance for the one school nurse on account of the extension of the borough, and Dr. J. V. A. Simpson notes that a new school is being built in the region of the new housing scheme which will conform to the high standard maintained in the borough. It is not always realised how far-reaching is the importance as an educative force of the hygiene of school buildings. Much is being done in Torquay for the pre-school children; treatment is open for them at the school clinics, including operations for tonsils and adenoids, and (especially valuable) treatment for early squint cases by glasses and fusion training. The orthopædic scheme also takes in pre-school

children, and they are included in the dental provision; it is hoped to get each infant at the welfare centre to the dentist for inspection, and treatment, if necessary. Tribute is paid to the school nurse, Miss Highes, and a chart shows how the percentage of unclean heads has fallen from 30 in 1908 to 2 in 1929. Arrangements have been made for dealing with tonsils and adenoids at the Torbay Hospital; the children are kept in hospital for about a week, and full provision is made for after-care. Dental work is satisfactory; only 106 permanent teeth were extracted on account of decay, compared with 3028 fillings—a ratio of nearly 30 to 1 in the right direction. The percentage of genuine objectors is only eight, and it is felt that this figure could be lowered by special efforts on the part of the teachers; in one school the percentage availing themselves of the facilities offered was 78, in another it was only 52. Nineteen per cent. promised to obtain treatment privately, but the promises were not always honoured. The condition of the teeth in the Grammar School children was not as much above the average as might have been expected. Excellent work is going on at the open-air school, at which also rheumatic heart cases are cared for; this school also deals with some crippled children who would elsewhere go to a special school. With the full orthopædic scheme in operation it may be hoped that one day crippled children will be rarities, crutches and irons "relics for museums." An appendix contains an account of Dr. Simpson's further work on the measurement of physiological efficiency with the Woolham-Flack methods, special emphasis being laid on the results of repeated tests; an unstable "wobbling" type occurs among the less fit. In practice the tests were found useful in selecting the boys to be allowed to swim.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 8TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 393 (last week 439); scarlet fever, 2601; diphtheria, 1720; enteric fever, 37; pneumonia, 1885; puerperal fever, 73; puerperal pyrexia, 114; cerebro-spinal fever, 17; acute poliomyelitis, 7; acute polio-encephalitis, 3; encephalitis lethargica, 14; dysentery, 34; ophthalmia neonatorum, 117. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on March 11th–12th was as follows:—Small-pox, 594 under treatment, 26 under observation (last week 602 and 23 respectively); scarlet fever, 2146; diphtheria, 2745; enteric fever, 13; measles, 1018; whooping-cough, 86; puerperal fever, 21 (plus 12 babies); encephalitis lethargica, 123; poliomyelitis, 1; "other diseases" 19. At St. Margaret's Hospital there were 8 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 152 (59) from measles, 8 (4) from scarlet fever, 51 (7) from whooping-cough, 48 (12) from diphtheria, 42 (12) from diarrhœa and enteritis under two years, and 88 (12) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Huddersfield, Bradford, Sunderland, and Newport (Mon.). Fatal cases of measles were concentrated at Portsmouth and Manchester each 12, Sheffield 9, West Ham 6, Blackburn 5. (Glasgow also reported 13 deaths.) Whooping-cough claimed 7 victims at Birmingham, 4 each at Middlesbrough and Newcastle-on-Tyne. No large town reported more than 3 deaths from diphtheria. Manchester reported 5 deaths from diarrhœa, Birmingham 4. The highest figures for deaths attributed to influenza were Hull 4, Brighton, Birmingham, Liverpool, and Middlesbrough each 3.

The number of stillbirths notified during the week was 293 (corresponding to a rate of 41 per 1000 births), including 41 in London.

Correspondence.

"Audi alteram partem."

ÆTIOLOGY OF DISSEMINATED SCLEROSIS.

To the Editor of THE LANCET.

SIR,—For several years I have thought that the functional efficiency of the liver is impaired in disseminated sclerosis, and in this respect my observations confirm those recorded by Miss Kathleen Chevassut in her important and interesting paper published in THE LANCET for March 15th. There is no doubt that the disease is often aggravated by childbirth, and sometimes its apparent onset or more frequently the occurrence of a period of activity is the immediate sequel of parturition. Dr. Gordon Holmes has noticed a similar result follow operations, even of a trivial nature. The common factor in childbirth and operations is the frequent use of chloroform, a well-recognised hepatic poison. I have also been impressed with the greater frequency of toxic symptoms following the injection of organic arsenical preparations in disseminated sclerosis than in other diseases, such as tabes. These observations led me to investigate the lævulose test in a small series of cases of disseminated sclerosis, and in the majority a slight but definite hepatic insufficiency was discovered. In one case the blood also gave an indirect van den Bergh reaction.

Apart from the possible connexion of hepatic insufficiency with the *Spherula insularis* described by Miss Chevassut, its presence is an indication that twilight sleep should be employed in place of chloroform when a patient with disseminated sclerosis is in labour, and that if an anæsthetic is required for any operation chloroform should never be used.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, March 16th, 1930.

THE DRAFT POOR LAW ORDER.

To the Editor of THE LANCET.

SIR,—It is a little disappointing to find THE LANCET commending an Order which tends to establish and entrench the existing system of poor-law administration just at the time—indeed the only favourable time—for breaking away from it. It is difficult to imagine a more inaccurate description than your word "modernisation" for this anachronism. You point out yourself that the opportunity has been taken, as in Article 19, to generalise some of the duties of the Guardians which were formerly prescribed in detail, and it should also be noted that the Ministry have issued, on Feb. 11th, Draft Rules and Orders in relation to relief which materially change the old position. As regards officers, however, the Draft Order prescribes duties and conditions of service which may have been necessary and desirable sixty years ago, but which are not only out of date now but thoroughly objectionable under what was hoped to be a new system of administration. It is not too much to say that if the Draft Order in its present form became statutory some of the reforms which the whole medical profession have considered desirable could not be brought into effect.

The view of the Ministry of Health, I believe, is that there must be the least possible amendment of the old Orders until they have time to consider in collaboration with the new authorities what vital changes ought to be made at a later date. I suggest that in the present instance this is the wrong way to approach the subject. In these matters there is definitely a tide which has to be taken at the flood, and there is grave danger that the determination of the Ministry that the transfer of poor-law administration shall be carried out smoothly at all costs, may result in such an establishment of the bad features of the existing system that it will be very much more difficult a year

or two hence to bring about locally changes which would now be accepted by the authorities and which the medical profession desire. It is wrong to say that "no medical officer of health or medical practitioner will find himself any the worse." If a change which was recognised to be more or less revolutionary, and which was threshed out for years before it was brought before Parliament and then established by statute and accepted by the public and its representatives, is found to be, in fact, no change at all, those who were supposed to be affected by it are in a weaker position than if the change had never been proposed.

I am, Sir, yours faithfully,

RALPH M. F. PICKEN,
M.O.H. and School M.O., Cardiff.

March 15th, 1930.

THE MISSIONARY DOCTOR IN INDIA.

To the Editor of THE LANCET.

SIR,—I venture to ask the hospitality of your columns for a quotation just received from a young missionary doctor in India which will, I think, prove of interest to many newly qualified men and women. Dr. Ruth Bocock writes in her annual report:—

"As I sit down to write this report there is one question uppermost in my mind, and this is, 'Why is it so hard to find a sufficient number of doctors to supply the needs of the mission field?' There are many answers, I know, to this query, but I am sure that one is that many people at home have a mistaken idea as to the conditions of medical work prevailing in India. When I first came out here, just three months after leaving my last English hospital, I did so with many misgivings. I was thoroughly in love with my work at home and very keen on all the latest advances and such like things. I had it well rubbed into me by all sorts of people that I was very foolish to throw up work in England, that the privations out here would be great from a medical point of view, and that the medicine I should have to practise would be very simple. My misgivings soon vanished into thin air; the routine in the hospital here I found to be very similar to that at home, and the diseases in many ways more varied and interesting. In less than a fortnight I found myself quite at home and realised that people who talk of doctors throwing up their careers by coming to India are very ignorant people."

Similar testimony could be borne by many from other countries as well, and the secretaries of any of the missionary societies in this country will be glad to hear from young doctors who wish for a very fine scope of service as a witness to the Christian faith.

I am, Sir, yours faithfully,

HUGH H. WEIR,
Secretary, Medical Missions Department, Society for the Propagation of the Gospel.

15, Tufton-street, S.W. 1, March 5th, 1930.

TENNIS ELBOW.

To the Editor of THE LANCET.

SIR,—I should like to congratulate Dr. Marlin on his brief yet very comprehensive paper in your issue of March 8th (p. 509). It seems to cover the whole ground on "Tennis Elbow" very effectively both as regards pathology and treatment, the former being largely hypothetical because of its varied causation. For the same reason the treatment is by no means stereotyped. In the typical tennis elbow which, in my judgment, is a fibrositis of the fascial attachment of the supinators to the external epicondyle of the right arm, and the typical golf elbow which is a fibrositis of the facial attachment of the supinators to the external epicondyle of the left arm, the treatment par excellence is manipulation. This consists in a hyperextension of the elbow joint, and is usually effected by a sudden movement at a single sitting without an anæsthetic. When this happy result fails to supervene, the case is not typical and is complicated by some other factor such as rheumatism, gout or traumatism. It is in such cases that diathermy, radiant heat, static electricity, or sometimes even surgical intervention is required.

I cannot help expressing the greatest surprise at the continued apathy of the medical profession in connexion with the subject of manipulative therapeutics. I know not whether I have been endowed with more than my share of tactile sensation, but I do know that from the very beginning of my medical career, close upon half a century ago, whenever I failed to cure a patient with the ordinary medicinal and other remedies, I always endeavoured to effect a cure by the use of my hands, not infrequently with excellent results. I am not at all surprised at the success claimed by the so-called osteopath in many cases which have baffled the regular medical practitioner, because the latter deliberately fails to recognise or even look for the real cause of the trouble. I have a strong suspicion that the average medico regards it as infra dig to use his hands on a patient. He confuses manipulation with massage, which he regards as a menial occupation only to be relegated to the bath attendant or other type of unsophisticated person. And yet, in THE LANCET of March and April, 1871, Wharton P. Hood, M.D., M.R.C.S., gave a description of what was commonly called "bone-setting." And we must never forget that it was four years subsequent to this date when another fully qualified medical man laid the foundation of the so-called science of osteopathy, which he claimed to be the only rational system of medicine.

Elsewhere[1] I have controverted this idea.

"If it be a system of medicine, at the best it is purely a system of one idea. Its nosology is a lesion; its symptomatology, a subluxation; its therapeutics, manipulation; whilst its pathology is accommodating enough to cut both ways, the subluxation being either the cause or the effect of departure from function. . . . Despite these limitations, however, as a method of treatment it serves a useful purpose not only in emphasizing the value of manipulation in disease, but in laying stress on cases which have previously been ignored or undiagnosed by the profession."

I wrote these words in 1910, and I can only add that from my increased experience I am more than ever satisfied that in manipulative therapy we have a valuable method of curing many cases otherwise incurable. I do not hesitate to plead for the admission of this new form of scientific bone-setting among the recognised methods of treatment practised by the medical profession.

I am, Sir, yours faithfully,

ALEXANDER BRYCE, M.D., D.P.H. Camb.

Birmingham, March 17th, 1930.

THE ENDOWMENT OF PATHOLOGICAL RESEARCH AT WESTMINSTER HOSPITAL.

To the Editor of THE LANCET.

SIR,—I write on behalf of my uncle Mr. A. J. H. Carlill, who in 1924 endowed the work of pathological laboratories at Westminster Hospital in order to commemorate the life of his father Dr. John Burford Carlill, to ask you to allow him to express to Miss K. Chevassut his congratulations on her research into the cause of disseminated sclerosis. If in 1924 we at Westminster Hospital had cause for congratulating him and ourselves that his munificent gift was made during his life, Miss Chevassut's work, apparently of far-reaching importance and done in the few years which have elapsed since 1924 and also during his life, must be a source of the greatest possible gratification to him. My uncle is on holiday in Australia.

A few points stand out on the clinical side. Miss Chevassut's discovery of the "specific" organism appears likely to enable us to diagnose the disease with certainty. Formerly a firm clinical diagnosis was by no means always easy, especially in early cases, and I may point out here that routine examination discloses for example abolition of epigastric and abdominal reflexes in a number of young people who claim no symptoms which are even suggestive of disseminated sclerosis and who appear never to have the disease. Miss Chevassut's discovery helps us also in the diag-

[1] Brit. Med. Jour., Sept. 3rd, 1910.

nosis of those often very difficult cases of coexisting disseminated sclerosis and hysteria. Lastly, we are now able to recognise with precision "cure" as distinct from remission, although we shall not expect every abnormal physical sign to disappear in cases of "cure." In a recent case of my own in which the prominent signs were an alternating hemiparesis and also palsy of a sixth cranial nerve almost complete clinical recovery from an illness which had lasted for two and a half years occurred within six months of treatment, and the cerebro-spinal fluid which was bacteriologically affected prior to treatment became sterile within the same six months. The only treatment was a single course of vaccine administered intravenously.

Future clinical workers should bear in mind the very real necessity of making thecal punctures which are perfect, and therefore painless. Arsenical injections, our stand-by in the recent past, should not be given to patients who are to be investigated by Miss Chevassut's methods. Permit me please to end this letter with an expression of my own congratulations to Miss Chevassut and to her co-workers in the John Burford Carlill laboratories.

I am, Sir, yours faithfully,

HILDRED CARLILL, M.D. Camb.,
Physician and Lecturer on Nervous Diseases, Westminster Hospital and Medical School; a Trustee of the John Burford Carlill Pathology Fund.

Harley-street, W., March 15th, 1930.

ÆTIOLOGY OF ENCEPHALOMYELITIS FOLLOWING SMALL-POX.

To the Editor of THE LANCET.

SIR,—As Dr. Troup and Dr. Weston Hurst have raised the question of the ætiology of encephalomyelitis following small-pox (THE LANCET, March 18th, p. 566), might we be allowed to comment on their conclusions? In their article, Drs. Troup and Hurst describe in detail a case of encephalomyelitis following small-pox, and show that the pathological lesion is essentially similar to that of post-vaccinial encephalitis; this they assume as indicating the awakening of some mysterious latent infection in both conditions. It seem to us that the reverse is the case, and that their essential similarity is strongly in favour of the fact that both conditions are due to the virus of variola. They also draw attention to the encephalitis which has been described as a complication of measles.

Time and space will only allow us to mention a few of the facts which can be adduced to refute their contention, quite apart from the all-important fact that so far no virus other than that of the disease has been isolated from these cases of encephalomyelitis.

It is well recognised that very similar histological lesions may be produced in ordinary tissues by different ætiological agents, as, for instance, in the case of syphilis and tuberculosis. Then how much more likely in the brain, where the type of reaction is necessarily limited, are similar histological lesions likely to be produced by different viruses; although certain well-marked types of lesions can be differentiated. But the encephalitic conditions with which we are dealing are mainly found in the later stages of general exanthematous diseases (variola, vaccinia, measles, &c.), the viruses of which are likely to have very similar actions. In typhus fever, for example, cerebral involvement is so frequent as to be reckoned part of the disease, and no latent virus can be postulated, yet the histology of the lesion is comparable with that of post-vaccinal encephalitis. Again, on the development of nervous symptoms in syphilis, no matter at what stage, there is no suggestion that a latent virus is at work. Lastly, clinical experience has in general shown that it is unwise to assume without adequate evidence an infection by more than one organism, and in the instances mentioned the evidence is definitely against such an assumption.

No new reason or fact, therefore, has been brought forward by Drs. Troup and Hurst to indicate that the encephalitis in variola and in similar condition is not produced by the actual virus causing the exanthematous disease.

We are, Sir, yours faithfully,

JAMES MCINTOSH,
R. W. SCARFF.

The Bland-Sutton Institute of Pathology, Middlesex Hospital, W., March 18th, 1930.

PROTECTION AGAINST MEASLES.

To the Editor of THE LANCET.

SIR,—Allow me to endorse Dr. Hugh Barber's letter in your last issue. Several disastrous epidemics in preparatory schools have come under my notice and, in every case, the children are moved to the sick ward and it has been a frequent experience to see every window wide open, the children washed twice daily, and fed, more or less forcibly, with milky foods. It is under these conditions that broncho-pneumonia and mastoids are so frequent. On the other hand, where a child is at home, is put to bed at the onset of fever in a warm room, given plenty to drink and only the food it desires, the attacks are almost always mild and the temperature normal at the end of the fifth day. I believe most sincerely that the less exposure the better. There is no necessity whatever to stethoscope the child and, certainly in the winter-time, the window should only be open sufficiently to keep the room aired, and the temperature should be at least 62° F. with the child carefully protected from cold draughts.—I am, Sir, yours faithfully,

H. BECKETT-OVERY, M.D., F.R.C.S.

London, March 18th, 1930.

Obituary.

HENRY WILLIAM ARMIT, M.R.C.S. ENG.

WE regret to announce the death in Sydney, New South Wales, of Dr. H. W. Armit, which occurred on March 12th, at the age of 59. He was until recently editor of the *Medical Journal of Australia*.

Henry William Armit was the son of the late William Armit, secretary to the Hudson Bay Company, and received his medical education at St. Bartholomew's Hospital, taking the London double qualification in 1894. He was for a time, after qualification, assistant medical officer at the Eastern Hospital of the Metropolitan Asylums Board, and was afterwards attached to the Lister Institute, but his knowledge of languages, mainly, led him to become a medical journalist. For this he was fitted, as he had, in addition to his practical knowledge, a broad outlook on professional questions. His services were largely used by the *British Medical Journal* as their representative at continental gatherings, and in this capacity he attended the International Congresses at Berlin in 1901 and 1907, at Paris in 1905, at Lisbon in 1906, at Cologne in 1908, and at Budapest in the following year. He was also for a time the London correspondent of the *Berliner Klinische Wochenschrift*, while his services were frequently used by THE LANCET as a topical correspondent. He was, as may be gathered, a good German scholar, and found time, in addition to his journalistic work, to translate two German books: one, the well-known book by Ehrlich and Lazarus, and the other a work by Professor von Schrötter, of Vienna, entitled the Hygiene of the Lung.

Just before the outbreak of war the *Medical Journal of Australia* came into existence, replacing two magazines, one of which was published in Sydney, and the other in Melbourne, and Armit went out, by invitation, to take the post of editor. The time was a difficult one for running what was practically a

new venture, but Armit met the responsibilities in an efficient manner, soon adding the duties of business manager to those of editor, and filling the joint post until the middle of last year, when he resigned, proposing to resume literary work in the home country. Within the last month he had communicated this intention, which was justified alike by his knowledge and experience, to friends in England, and they will be grieved to learn by telegram of his decease.

JOHN WEBSTER LOWSON SPENCE, L.R.C.P. EDIN., J.P.

Dr. Spence, who died at Edinburgh on March 15th, was one of the early workers in radiology, and one of those who went through much suffering as a result of exposure to X rays. Soon after qualifying in 1898 he associated himself with the late Dr. Dawson Turner in the electrical and radiological department of the Edinburgh Royal Infirmary. In 1907 he was appointed to the charge of the electrical department of the Royal Hospital for Sick Children, and retained the office until the end of last year. He was also radiologist for many years to the Leith Hospital and the Deaconess Hospital.

When Dr. Spence began his work comparatively little was known either of the potency or of the risks of X rays. It was difficult to protect operators from unknown dangers, and he suffered more and more from dermatitis as time went on. In 1908 his hands began to suffer, and in 1916 the right arm had to be amputated. For the last five years the left hand had also been seriously damaged, but, as long as strength remained, he continued his work, both public and private, and his courage never failed. In 1922 the Carnegie Hero Fund trustees awarded him a bronze medallion and an annuity for his services. There can be no doubt that his life was shortened by the progressive destruction due to X ray exposures, but his personal misfortunes had no small influence in awakening the responsible authorities in Edinburgh to the need for the stringent precautions that are now a feature of every good radiological installation.

IAN STRUTHERS STEWART, M.D., F.R.S. EDIN.

Dr. Ian Stewart, who died last week after a long illness, was a graduate of Edinburgh University, where he took the M.B. degree in 1901. After experience in hospital appointments and in general practice he went to Nordrach-on-Dee Sanatorium as pathologist. Later on he devoted himself to bacteriology in Edinburgh and then became the head of three Scottish sanatoriums—first the Ochil Hills, then Tor-na-Dee, and lastly Nordrach-on-Dee. A colleague writes: "As a student and as a house physician Stewart showed the same enthusiasm and attention to detail which marked his later work in tuberculosis sanatoriums. Nothing but the best would satisfy him and there is little doubt that he undermined his health by his devotion to duty. His lectures on tuberculosis at Aberdeen University were appreciated by students and others who attended them; his wide experience was put forward with such modesty. A keen mountaineer and a first-class photographer, he was never happier than when on holiday in the Cairngorms or in his beloved Western Isles. He will be greatly missed by his many friends and by the large circle of patients who came under his kindly care."

Dr. Stewart leaves a widow.

ST. MARY'S HOSPITALS, MANCHESTER.—At the annual meeting of St. Mary's Hospitals for Women and Children, Manchester, on March 12th, it was reported that 19,152 patients were treated during the year, and that there was a deficit for 1929 of £1080, compared with £1669 in 1928. The ordinary expenditure amounted to £33,846. There is an urgent need for more beds for in-patients, and there is always a large waiting list.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

MENTAL TREATMENT BILL.

THE Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Thursday, March 13th. Mr. CECIL WILSON was in the chair.

Temporary Treatment without Certification,

On Clause 5,

Sir BASIL PETO moved an amendment to leave out paragraphs (2) and (3) of Subsection (1) in order to provide that temporary mental patients besides being received into institutions provided by the local authority might also be received into "any other hospital or nursing home approved by the Minister of Health for the admission of such temporary patients, and not containing certified patients." He said he wanted this to be recognised as a health service, not associated with lunacy and mental aberration. The Minister of Health might well approve of institutions quite unconnected with advanced cases of lunacy for the purpose of this early curative treatment.

Mr. GREENWOOD (Minister of Health) said the principles of the amendment had already been discussed by the Committee. In practice the only change of substance which it made in the Bill was to substitute the Minister of Health for the Board of Control. The Committee had already decided that principle. Unless they were to make very far-reaching changes in the principal Act with regard to the powers of the Board of Control, the only effect of this amendment would be to substitute a double-barrelled system of supervision and unnecessary duplication. The Royal Commission unanimously reported against this proposal which, they said, they did not consider desirable or practicable.

Mr. KINLEY said that a new class of treatment for a new class of patient was being set up by this Bill, and if the Bill passed in its present form its effect would be to widen the area at present covered by the Board of Control. These temporary patients needed a different form of treatment and atmosphere from that required by certified patients who were not likely to recover within a short time. To mix up the two classes was, he submitted, wholly bad, and it was the very thing they ought to set out from the beginning to avoid. They ought not to be deterred from doing what was right because of the difficulties in the way.

Replying to further debate,

Mr. GREENWOOD said that it was already possible under the Bill for patients to be sent to hospitals and homes which were not mental institutions.

The amendment was negatived.

Mr. KINLEY moved an amendment to Subsection (2) to provide that on every application form for treatment it should be set out in distinctive type that a patient for whom the application was made might, on the report of a Commissioner to the Board of Control, be certified and removed to a lunatic asylum.

Mr. GREENWOOD said he hoped that the Committee would not accept the amendment which was foreign to the spirit of the Bill. What was the need for advertising the fact that a man might be certified? The only reason was to allow Mr. Kinley to make another speech about the Board of Control. A person who was entering an institution under Clause 5 ought not previously to be reminded that he might be condemned subsequently to certification. The whole purpose of the clause was to get early treatment and to avoid certification, and such a statement on the form of application as was asked for by the hon. Member would act as a deterrent to friends and relatives of patients and defeat the object of this clause.

The amendment was negatived.

An amendment moved by Lieut.-Colonel FREMANTLE providing that the notice should be sent to the person in charge was accepted by Mr. GREENWOOD and agreed to.

Safeguarding the Patient.

Dr. MORRIS-JONES moved in Subsection (3) to leave out the words

"of whom one shall be a medical practitioner (not being the usual medical attendant of the person to whom the application relates) approved by the Board of Control for the purpose of making recommendations under this section and the other shall be, if practicable, the usual medical attendant of the person to whom the application relates."

and to insert instead the words:—

"of whom neither shall be the medical superintendent of, or a medical practitioner employed or remunerated by the institution, hospital, home, or place where the patient is received for the purpose of treatment, except where the institution is provided by a local authority."

He said that he wanted to safeguard more adequately the patients by inserting a proviso that the medical man who was recognised by the Board of Control should not be the doctor of the institution to which the patient had been admitted. He excepted those institutions run by local authorities. The position of the medical man there was quite different; he had no financial interest in the patients he had admitted. This amendment dealt with private institutions. He was sure that the medical men in charge of those institutions were as honourable a body of men as existed in any other profession, and he did not wish to cast the slightest reflection upon them; but he felt that they were not entirely disinterested persons in regard to the admission of a case. Quite possibly there might be a suggestion of bias in favour of admitting a case into an institution run for profit. There was also the factor that in this particular case these men did not run the danger of serious penalties. It was very important that the medical man should be independent and disinterested in the admission of a patient and from his experience of these matters he hoped the Minister would accept the amendment.

Mr. GREENWOOD said that it would be remembered that during the passage of the Bill through the House of Lords the words which it was now proposed to leave out were nserted as an additional safeguard. At the same time under the lunacy laws a man who was the manager of an institution, or was in charge of a single patient, could not sign the certificate. He thought that that was right and it would be well to give that added protection in this Bill. But it would only make trouble to leave out these words. If Dr. Morris-Jones would withdraw his amendment he (Mr. Greenwood) was prepared to add the following words at the end of the subsection:—

"Provided that in the case of a person who is to be received into a licensed house or a nursing home, or into charge as a single patient, the recommendation shall not be signed by the person in charge, or by any person in the employment of the person in charge, or by any person interested in the house or home, or by any person in the employment of any person so interested."

He thought that this proviso would meet the point which the hon. Member had in mind.

Dr. MORRIS-JONES withdrew his amendment and Mr. Greenwood's proviso was agreed to.

Reasons for Recommendation.

Sir BOYD MERRIMAN moved an amendment to Subsection (4) providing that the two medical practitioners who were to sign the recommendation under the clause should state the grounds on which they based their recommendation. He said that although it was intended and hoped that this form of temporary treatment would result in prevention, and would avoid the necessity of ultimate certification, nevertheless in certain cases it was inevitable that it would be a step to certification. It was vital that the persons who were taking upon themselves the responsibility in the case of a person who was admittedly, for the time being, unable to make up his own mind, particularly when the intervention of the judicial authority was being done away with, should be bound to put on paper the grounds for his recommendation. The words which he (Sir B. Merriman) had incorporated were taken from the corresponding words in the certificate under the Lunacy Act in the case of certification. The insertion of some such provision would be in the interests not only of the patient but also of the doctor.

Mr. GREENWOOD said that he thought Sir B. Merriman had made out a case. It was quite clear that they ought to protect both the patient and the doctor, and that in the case of a recommendation being made it was in the interests of both that the grounds on which the recommendation was made should be specifically stated in writing. He therefore accepted the amendment.

The amendment was agreed to.

An amendment moved by Mr. GREENWOOD to the effect that in the case of a public institution which had a visiting committee the duty of sending out the notice should be placed upon the clerk of the institution was agreed to.

The Powers of the Board of Control.

Mr. KINLEY moved to leave out Subsection (14) which provides that the Board of Control may at any time order:—

(1) that any person received as a temporary patient shall be discharged; or (2) that steps shall be taken to deal with him under the principal Act as a person of unsound mind.

He said that when they were bringing into existence an entirely new health service it was not right that they should hand over practically unlimited power to the Board of Control.

Mr. GREENWOOD said that if they cut out this subsection there would leave in the air two very important duties which ought to devolve on somebody. He regarded Subsection (14) as one of the most important safeguards in Clause 5. It was a protection for the class of person who got better and ought to be discharged. There was also the case of a person who was received under the clause for temporary treatment and who were not likely to need it further, but in whose interests there ought to be certification without further delay. Under this subsection they had a central authority with powers which they could exercise in the interest of the patient. It was quite clear that the local authority would not wish to exercise those powers, but it was a job which someone had to do, and for which the Board of Control was eminently fitted.

Mr. KINLEY urged that it was not a good thing to put all this power into the hands of a Commissioner who might not be a medical man.

The amendment was negatived.

Sir B. PETO moved to insert at the end of Subsection (14) the words:—

"Provided that no action shall be taken under (ii) of this subsection unless the patient has been visited by a medical member of the Board of Control, and that the action is taken on the recommendation of such member."

He said that the action which the Board of Control was empowered to take under this subsection should only be taken after a patient had been visited by a medical member of the Board.

Mr. GREENWOOD said that the Board of Control itself never certified. What steps were necessary were taken in the ordinary way by the doctor and magistrate, &c. But the Board had power to say that steps should be taken. Sir B. Peto wanted it to be compulsory for the Board in all cases to consult a medical Commissioner. It might interest him to know that many of these patients preferred a legal Commissioner. The Board was not entirely a medical body, and when they considered a report they did so in the light of available medical and legal knowledge. In some cases it might well be that a legal Commissioner would be a more suitable person to report to the Board of Control than a medical Commissioner, and therefore the Board must be allowed freedom to use their Commissioners in the way they thought best.

The amendment was negatived.

On the question that the clause as amended stand part of the Bill,

Period of Detention.

Lieut.-Colonel FREMANTLE said there was one point which he would like to raise. In Subsection (13), regarding the period of detention, he had been urged by those who were greatly interested on behalf of the patients to say that the period of detention should not be limited to the periods in the Bill. The period began with six months and might be extended under Subsection (13) for a period not exceeding three months by the Board of Control. One proposal which had been made was that the period should be two years subject to a report from the Board of Control. But his reply to that was that when they were introducing a novel experiment of this kind, and when there was a great deal of hesitation on the part of the lay public, as well as in Parliament, regarding the acceptance of this measure, it was better to be content with the thin end of the wedge. He therefore gave the entire assent of himself and his medical colleagues to this subsection as it stood, but they would very carefully watch those who were concerned in the administration of the measure, and look into its working. He had no doubt that as the public acquired confidence in the working of this subsection there would be a movement to extend the period for a longer time.

Sir B. PETO said that, speaking as an ordinary member of the public, and not from the medical point of view, he regretted that they had not amended this clause in an effective manner. Verbal amendments had been made, but the main structure of the clause remained, and in that main structure the protection of the judicial authority was removed from these cases of temporary treatment. Cases might be taken to asylums and treated in close connexion with people who were certified as insane; and the Board of Control was in authority over these cases of people who submitted themselves for remedial and early treatment. So in making provision for a fresh class of mental case they were giving them much less protection than was afforded to certified patients. By taking this course, which might have the merits of economy, they were passing Clause 5 in such a form that the public were not likely to make any great use of it, voluntarily at any rate. Colonel Fremantle, speaking for the medical profession, had said that the operation of the clause would be very carefully watched by that profession to see how it could be stiffened up and the periods of detention lengthened in the future. On the other hand, members of the general public would watch the operation of the clause and note what percentage of people submitted themselves to treatment, and how many of them benefited by the curative provisions.

Sir DOUGLAS NEWTON said he felt they were shouldering a very heavy responsibility in this clause for the unfortunate people who were subsequently found to be incapable of

volition. He hoped the Minister as soon as the Bill reached the Statute Book would exercise to the full his powers to see that rules and regulations were passed which would really safeguard the people who were placed under control in the manner provided by this Bill.

The clause as amended was added to the Bill.

The Committee adjourned.

The Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Tuesday, March 18th. Mr. CECIL WILSON was in the chair.

Powers and Duties of Local Authorities.

On Clause 6 Mr. GREENWOOD (Minister of Health) moved an amendment in order to make Subsection (1) read as follows:—

"It shall be the duty of every local authority to investigate the needs of their area and to take such steps as they consider necessary to provide and maintain suitable accommodation for the reception of temporary patients under the last foregoing section of this Act."

He said that he would have preferred the Bill to remain as it was, but he was very anxious to meet the wishes of the local authorities as far as possible, and to secure th ir goodwill, and therefore he had agreed to this amendment. But he had pointed out to the County Councils Association that under Section 104 of the Local Government Act it would be quite possible for the Minister to reduce the block grant to local authorities which failed to institute and maintain a reasonable standard of progress in relation to public health services. By a later section of the Local Government Act it was stated that this provision applied to lunacy and mental deficiency. The local authorities would be required to make their own investigation of their needs, and to take steps to put their own plans into operation. Whether the authorities would suffer financially depended on the circumstances. He had no intention or desire to bully local authorities; his powers would only be exercised in this matter when he could justify them to Parliament.

The amendment was agreed to.

Mr. GREENWOOD moved an amendment to the effect that a local authority should have power, subject to the approval of the Board of Control, to contract for the reception and treatment of temporary patients in any registered hospital, or any institution, hospital, or nursing home, approved by the Board of Control.

The amendment was agreed to.

Board of Control and Local Authorities.

Mr. GREENWOOD moved the first of a series of amendments which he said were designed to give greater freedom to local authorities from interference by the Board of Control, except in respect of research. It was desirable that the Board of Control should retain its powers in that regard in order to secure the maximum amount of coöperation, to avoid duplication, and to produce the best results. These amendments were of considerable importance, and had been framed after consultation with the County Councils Association in order to meet their views.

Lieut.-Colonel FREMANTLE said while he agreed that it was necessary to give the utmost possible liberty to the local authorities in this matter, which was consistent with the coöperative working of the whole machine, he was not altogether pleased with the removal of the approval of the Board of Control under the amendments before the Committee. If the Board worked sensibly, it was desirable that they should have supervising power over the whole of this machine. He therefore thought that the Bill as originally drafted was right, but as the County Councils Association has taken up this line it was expedient to meet their views. He hoped, however, that the county councils would enable the Board of Control to work the whole machine as they would have done if the Bill had remained unaltered. He was very glad that the Board of Control were to retain in their hands the matter of research. A great deal of money was being wasted under the heading of research in this country to-day, and it was necessary to be careful in order to prevent the word research being used as an excuse for spending money. It was necessary to see that research was coördinated and that overlapping was prevented.

Dr. MORRIS-JONES associated himself with the remarks of Colonel Fremantle. He could not understand the tremendous fear which existed in regard to the Board of Control. The Minister had been very conciliatory, and he was not quite sure that in time it would not be discovered that the right hon. gentleman had been too conciliatory in this matter. He would have thought that local authorities would have welcomed a certain measure of approval coming from an expert body like the Board of Control.

Sir DOUGLAS NEWTON congratulated the Minister on his courage in making this considerable alteration of the Bill to meet the reasonable representations of the County Councils Association. Local authorities in the past had been very irritated by the interference of the Board of Control in these matters, especially in view of the fact that the Exchequer did not find any of the cost. He was anxious to know whether the new freedom accorded to local authorities included questions relating to buildings used in connexion with mental treatment.

Mr. GREENWOOD said that no doubt local authorities would like to revise the whole of the system of central controls set up under the principal Act, but that could not be done under this Bill. The new freedom being accorded to the authorities applied to this section alone, and if the local authorities meant more than that they were trying under the guise of an apparently innocent series of amendments to make a fundamental change in lunacy administration laid down in the principal Act. The position in regard to buildings was unaltered by these amendments. The control of the central authority set out in Section 254 of the principal Act remained in operation. He would like to remind the Committee again that this Bill did not deal with the larger problems of lunacy administration provided for in the principal Act.

The amendments were agreed to.

Other Amendments.

Mr. KINLEY moved an amendment to limit the expenditure under Subsection (4) of Clause 6 to the proceeds of a halfpenny rate. He said that the local authorities to-day were heading towards bankruptcy. Year by year Parliament was throwing upon them increased financial burdens which their resources were not expanding to meet.

Mr. GREENWOOD said that while it was quite true that no one could say at present what the expenditure would amount to under this measure that was also true of most social legislation which had been passed. It was in any case very difficult to limit by Statute the expenditure of local authorities in the way proposed by this amendment.

The amendment was negatived.

Mr. GREENWOOD moved an amendment which he said was necessary in order to bring the new transferred institutions which the local authorities might use under the Local Government Act for the purpose of mental treatment under the same rules and regulations as applied to the other institutions which were already used for that purpose.

The amendment was agreed to.

Mr. GREENWOOD moved an amendment providing that the Asylums Officers' Superannuation Act, 1909, should have effect as if for references therein to mental hospitals there were substituted references to institutions maintained by local authorities.

The amendment was agreed to.

Clause 6 as amended was added to the Bill.

The Committee adjourned.

EYE TESTS FOR MOTOR DRIVERS.

The Road Traffic Bill was considered by Standing Committee C of the House of Commons on Tuesday, March 11th. Sir HUGH O'NEILL was in the chair.

Provisions as to Physical Fitness of Applicants for Licences.

On Clause 5 Dr. SALTER moved an amendment to Subsection (1) providing that an applicant for a licence should produce a certificate showing that he had satisfactorily passed an eyesight test as to visibility and colour. He said that he gathered that it was the intention of the Minister of Transport when this Bill became law that every applicant for a licence should make a declaration of a somewhat elaborate character as to whether he was suffering from certain physical disabilities. He also understood that the Ministry of Health had drawn up a form, and that the list of the said disabilities was quite lengthy. From his (Dr. Salter's) point of view, any such declaration was quite useless, especially in regard to conditions affecting the eyesight. There were large numbers of people suffering from grave visual defects who were quite unaware of any defect, and could quite honestly make a declaration that they were physically fit and capable of driving, and at the same time they might be extremely dangerous persons when in charge of a motor vehicle on the road. The only safeguard was to insist that everyone should produce an appropriate medical certificate in the prescribed form. During the past week he had had conversations with four or five of the most experienced and distinguished ophthalmic surgeons in London. They all told him that they had seen people suffering from grave eye trouble in the last year or two, and the first intimation that those people had that they had a visual defect was when they met with an accident while driving a car. Enormous numbers of drivers had got defective eyesight and no one knew for how many accidents they were responsible.

Four Classes of Visual Defectives.

There were at least four classes of persons suffering from visual defects who ought not to be permitted on the roads at all. The first was the class of people with extreme myopia. There had been a considerable number of dangerous driving cases where men had put up a plea that it was due to shortsightedness. In the Tiverton division last year a man put up such a plea and he was fined £5 and his licence was suspended for 12 months. But his eyesight would not be better after 12 months. In a letter to the *Times* the editor of the *Optician* pointed out that there was a growing practice, not only of having colour signals for the direction of road traffic, but also various forms of semaphore, and that the size of the letters forming the word "stop" on a revolving signal were visible only to drivers with a good standard of vision. At least one driver in 100 failed to see this signal. Again, there were thousands of cases where people had put forward the excuse that they were unable to read the particular sign exhibited for their guidance. The second class of person who ought not to be allowed to drive, at any rate after dusk, was the person who suffered from night blindness. There was a very large proportion of people, certainly not less than 5 per cent. of the population, who suffered from night blindness—that was to say, they either could not see at all in the dark, or their vision was extremely defective. There were people, on the other hand, whose vision was better in the dark than it was by day. There was an increasing proportion of accidents at night and after dark, to which the London and Home Counties Traffic Advisory Committee called the attention of the Minister in their recent report. In the report on street accidents in Greater London, March, 1927, it was pointed out that the percentage of persons killed by motor vehicles by day had gone down from 77·5 to 68·5, whereas the percentage killed at night had gone up from 22·4 to 31·5; those injured by day had gone down from 83·5 to 76·3, and those injured by night had gone up from 16·4 to 23·6. It was only right that persons should be duly certified as physically fit to drive at night. Another class of person was that suffering from various diseases of the eye itself, and the central nervous system, whose field of vision was obscured or completely blotted out at places.

It was an interesting fact that a great many of these people first sought medical advice for diseases of the central nervous system, like disseminated sclerosis and locomotor ataxia, because they had discovered the defect through having met with an accident. They ought not to be allowed to drive on the roads. There was a certain type of person who, with the passage of years, suffered from a steady diminution of the circumferential area of the field of vision. At least one Member of the House of Commons had told him that he was obliged to give up driving because he could only see straight in front of him. That was a matter which led to accidents and prevented a driver seeing cars coming out of side roads. There was a still more important visual defect which would grow in importance in coming years if the present system of regulating traffic by means of signals was extended.

Automatic Colour Signals.

It was clear that the Minister of Transport was encouraging all the great towns to establish automatic colour signals. There could be no dispute, however, that many thousands of people were totally colour blind. Swansey, in his authoritative work on diseases of the eye on page 19, said:—

"A certain proportion of people, 3·5 per cent. of men and about 1 per cent. of women, are congenitally colour blind in greater or less degree."

These people could not possibly obey the signals. As a matter of fact people had been charged with overrunning the colour signals—he believed in Derby and other northern towns—who pleaded that they were colour blind. The railway companies discovered that at least 2·2 per cent. of men examined for the post of driver or fireman were practically colour blind. It was a remarkable fact that a man might pass a colour test one year and five years later it might be found that his colour vision was defective and he had to be displaced. In Germany a strict medical test was enforced. An official doctor had to be engaged at a fee fixed by the State, and within the last 12 months in Prussia a compulsory test for colour blindness had been included. If Parliament was desirous of protecting the public from accidents on the roads and of safeguarding human life it was essential that tests for sight should be imposed and a proper certificate submitted.

Lord ERSKINE submitted that the words of the amendment were really redundant. If a man was so extremely shortsighted that he could hardly see at all he imagined that that would be one of the disabilities included under the clause. Colour blindness was a very unfortunate thing, but he did not think that they could say that because a man happened to be colour blind he should be debarred from driving. If they were going to have this system of lights they must make some provision for those who were colour blind, because he understood that disability was increasing.

Major HILLS said he hoped that something could be done in the direction of the amendment.

A Standard of Shortsightedness.

Mr. HERBERT MORRISON (Minister of Transport) said he did not want to make the absolute bars to receiving a licence too numerous, because there was a whole field of diseases or disabilities where there was an element of doubt. But certainly he would regard extremely short sight as one of the disabilities which would be specified in the form, and would be an absolute bar to the grant of a driving licence.

Lord ERSKINE: Uncorrected by spectacles?

Mr. MORRISON said that even with spectacles, if a man were still definitely shortsighted, that would be an absolute bar to driving.

Dr. SALTER asked the Minister up to what point he put the limit? Was it 25 per cent. or 50 per cent. of the normal vision?

Mr. MORRISON said he could not get as far as that point at this stage, but the standard would be laid down in the form, and it would be for the applicant to satisfy himself that his sight reached that standard. But it was not proposed that applicants should produce any form of medical certificate. There were two ways in which the medical certificate could be dealt with. The applicant could go to his own medical adviser or ophthalmic surgeon—but with great respect to the profession there would not be complete reliance that medical certificates were always given in strict accordance with the facts when perhaps a man's employment might depend on the result of the certificate. The alternative method would be that there should be doctors in the public service who would be employed on this work. He was suspected, during the Second Reading of the Bill, of intending to appoint an army of officials, but he was afraid he would have to appoint such an army of officials if all that work was to be done. Therefore that scheme seemed to him to break down. It must be remembered that a man who made a false declaration was liable to very severe penalties—namely, £50, or six months' imprisonment or both. If a man knew that and also that he might be involved in an accident because of a defect which he did not declare he would be very careful about making false declarations in his application for a licence. In Subsection (4) of Clause 5 of the Bill it was provided that a licensing authority which suspected that a man was suffering from a disease or physical disability, either at the original granting of the licence or at any subsequent time, might revoke the licence. Therefore there was a running check all the time. If the purpose of this amendment was to be met there would have to be a medical examination on the granting of the first licence, and every year on its renewal. That would involve the appointment of an army of medical men and cause irritation and trouble to the drivers in having constantly to undergo these tests. As to the light signals, a man who was colour blind could at any rate in the daytime see the position of the light. The positions would be regular, and drivers would know whether it was the first, second, or third light. The same men would be able normally to read the word "stop," "go," or "caution"; and there was therefore a check there. Finally, the man who knew that he was defective in this regard and might get into difficulties would probably have someone with him who would be able to point out these things. He agreed that this was not a completely satisfactory assurance, but it was sufficient to warrant the Committee in not imposing conditions which would be vexatious and irritating to a large and eminently respectable section of the community who would resent these numerous tests. The clause as it stood was reasonable and went as far as they could go at the moment.

Mr. GEORGE OLIVER said he was authorised to say that the people employed in driving commercial and passenger vehicles viewed this amendment with grave apprehension. If the tests outlined that day were to be applied there was hardly 1 man in 100 who would escape.

The amendment was rejected by 44 votes to 4.

Driving Tests.

Mr. D. HALL CAINE moved that applicants for licences should be required to satisfy the licensing authorities of their competency to drive with reasonable skill, and of their knowledge of the rules of the road. He said this country had by far the largest proportion of accidents compared with any other, and it was practically the only country where there were no driving tests. The standard of driving in this country was bad.

Lieut.-Colonel HOWARD-BURY said that driving tests in other countries were in most cases an absolute farce. The dangerous drivers who took risks would be able to pass all the tests and the Royal Commission had pointed out that

a very small percentage of accidents was caused by inexperienced drivers.

Mr. MORRISON said the Ministry of Transport and the local authorities could appoint large numbers of officers to administer driving tests; but it was doubtful if Parliament would assent to the expenditure involved, and the question arose whether the results of the tests would be worth the money spent on them. The tendency would be for the tests to be perfunctory. The person who they wished to get at was the dangerous driver who would be able to pass all the tests with ease.

The amendment was rejected by 36 votes to 10 and Clause 5 was then agreed to.

MEDICAL OFFICERS FOR THE NAVY.

On Monday, March 17th, Mr. ALEXANDER, First Lord of the Admiralty, in moving that the House of Commons go into Committee on the Navy Estimates, said that the Medical Director-General had reported that the health of the Fleet personnel had been very good for the past 12 months, and no serious epidemics had occurred. Some concern was felt, however, by his advisers in regard to the difficulty of obtaining an adequate supply of medical officers in spite of the very special efforts made during the past 12 months by the Medical Director-General. As the medical profession was not without some direct representation in the House of Commons, he hoped that they would be able to use some influence in the direction of assisting the Admiralty on this matter.

Welfare of the Sailor.

Very substantial provision was now made for the welfare of the men, which was a great factor in maintaining general health and efficiency. The pressure of preliminary naval negotiations and the Conference itself had prevented him (Mr. Alexander) from giving the amount of personal attention which he would like to this side of the Admiralty's activities, but the welfare work had been going on well, and in the conferences which were to meet shortly, opportunity would be given for new suggestions to be considered. He was much impressed in the course of a short visit to the Atlantic Fleet, during the autumn exercises, with the general fitness, keenness, and efficiency of the men in the Service, and it was not surprising that they were welcomed in countries all over the world.

The Vote for personnel was afterwards considered in Committee.

Major ROSS said that it appeared that nearly all the stores were being reduced—victualling, clothing, and even medical.

Mr. ALEXANDER pointed out that he had explained that he had to meet commitments this year made by his predecessor, a large proportion of which was in respect of additional stores.

Major ROSS said that the Navy Estimates showed that there was a large decrease in stores. There were reductions in medical and surgical stores. The sum provided by the First Lord for the provision of medical stores and surgical appliances had been reduced by some £11,000, and he suggested that the First Lord was not keeping the stocks which had been supplied up to the standard. It seemed to him that the stores were being cut dangerously low.

Shortage of Medical Officers.

Dr. VERNON DAVIES said that the First Lord of the Admiralty, in his statement to the House, showed that he was rather perturbed at the lack of medical officers. He was reducing the personnel of the Navy by 2750, and he had said that he could not understand why the medical services, not only of the Navy but the Army, were not more popular. He (Dr. Davies) suggested that probably the terms were not quite good enough, and yet the terms were very good. The First Lord had visualised a time when boys from elementary and secondary schools would pass through the university and into the Services of the Crown. They were doing that now in the medical profession, and that was the difficulty that they were up against. If he might say so, without offence, medicine was becoming more of a trade and less of a profession. Many of these young men had no money; they had spent all their money on their education. They had become qualified and were out to do the best they could for themselves. They had several opportunities before them in civil life. A young doctor could set up in a national health insurance panel practice, and there were other openings, but if he went into the Navy, even on the short service system, though he could go out with a gratuity of £1000, he had to give three years or five years of his life. He had to go abroad. He dare not get married because the Admiralty would not give him a pension. On the other hand, those who did not go into the Service but stayed at home could earn as much money; they could get married and enjoy home life. They had before them specialised services, such as tuberculosis service, school medical services, and others in which they could work for six or seven hours a day on five days of the week, and earn from £600 to £900 a year. With that prospect on shore, why should a young doctor go to sea? He would be very silly to do so, unless he had a great love of the sea. The First Lord might make up his mind that the medical services of the Crown would have to be amalgamated. It was no use asking the heads of the separate medical services to agree to such a proposal, because they were not going to commit hara-kari.

Preferential Claim on Crown Appointment.

The Government would have to make up their minds that when they wanted medical men they were in competition with the great civil medical services of the country, both national and municipal. His (Dr. Davies's) suggestion, for what it was worth, was: Would it not be possible to give to men who had served in one or other of the Services for five years a preferential claim on all medical appointments under the Crown, or under the municipalities? It really was a question of choice between a man who had given five years of his life to the service of the country voluntarily and the man who had stayed at home. When the Government wanted a medical man for a post under the Ministry of Health, or any other Department, the man who had served his country for five years should have a preferential claim. By offering an inducement like that they would get these young men into the Service. Unless they had an efficient medical service they would not get a healthy Navy; if they did not get a healthy Navy they would have an inefficient Navy, and, as would be remembered, it was the medical men who won the war. There was never a war in all history where there was less sickness and disease, or where more people were cured after being disabled. It was the medical profession, absolutely, which won that war by keeping the men fit. It was no use having the ships unless the men were healthy and fit, and he hoped that the First Lord would not be discouraged at the lack of entries into the medical service, but would recognise that there were more tempting offers made outside, and that it was up to his Department to see if they could not make the Service more attractive to these men.

The Vote was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 12TH.

Institutional Accommodation for Mental Defectives.

Dr. VERNON DAVIES asked the Minister of Health the number of local authorities who had provided any accommodation for mental defectives, the number who had failed to do so, and the estimated number of mental defectives for whom no institutional accommodation was available.—Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: Twenty-nine out of 1924 local authorities (or combinations of authorities) have made some provision for the residential care of the mentally defective. As my right hon. friend stated in reply to a similar question on Dec. 19th, the present accommodation is inadequate; and if the figures estimated by the Departmental Committee on Mental Deficiency be accepted, the shortage of beds would probably be approximately not less than 20,000.

Repair of Hospital Ship "Maine."

Sir ROBERT GOWER asked the First Lord of the Admiralty whether he would consider the desirability of placing the order for the construction of the contemplated new hospital ship with the Royal Naval Dockyard at Chatham.—Mr. ALEXANDER replied: No new hospital ship for the navy is included in the present programme of new construction: but the existing hospital ship *Maine* is now undergoing large repair at Chatham dockyard.

Government and the Factories Bill.

Sir KINGSLEY WOOD asked the Prime Minister whether he proposed to give facilities this session for the Factories Bill.—Mr. SNOWDEN (the Chancellor of the Exchequer) replied: I regret that in the present state of public business I am unable to say when this Bill can be introduced.

Silicosis and Disablement.

Mr. KELLY asked the Home Secretary how many cases of disablement from silicosis were reported in 1929; the number partially disabled, with the number permanently disabled; and the number of fatal cases.—Mr. CLYNES replied: The only complete figures I can give at present for 1929 are those of cases dealt with under the Compensation Schemes for silicosis in the refractories and sandstone industries. Under the Refractories Scheme there were 18 cases of partial and one case of total disablement, and ten fatal cases. Under the sandstone scheme (which came

into force only on April 1st last) there were two cases of partial and seven cases of total disablement, and five fatal cases. The figures for the industries included under the other two schemes now in force are not yet available, but roughly 100 cases in these industries—about half of which were fatal—have come to the notice of the Department.

THURSDAY, MARCH 13TH.

Alleged Interruption of Antivivisection Meeting.

Mr. FREEMAN asked the Home Secretary whether he was aware that at a public meeting held in the Friends Hall, Euston-road, W.C., on Thursday, Feb. 27th, 1930, to protest against the use of poison gas in experiments on dogs, there was an organised attempt to interrupt the meeting by medical students in spite of the efforts of from 20 to 30 policemen and about 40 stewards; and whether he would take measures to see that such meetings were protected from disturbance.—Mr. CLYNES replied: No, Sir, my information is quite different. A number of police were available but their assistance was not called for or required, and I am informed that the stewards had no occasion to take action against interrupters.

Medicated Baths and Rheumatism.

Mr. LEE asked the Minister of Health whether he was prepared to make grants to enable urban district or county councils to provide medicated baths for the treatment of rheumatism and kindred complaints at such public baths or hospitals as might now be in existence, or to erect special baths for the purpose.—Mr. GREENWOOD replied: I have no funds at my disposal from which grants could be made for this purpose.

The Treatment of Rheumatism.

Mr. GRAHAM WHITE asked the Minister of Health whether in view of the suffering and loss of national efficiency due to the incidence of rheumatic diseases, he would set up a committee to consider the best means of extending facilities for treatment and making a comprehensive attack on this evil.—Mr. GREENWOOD replied: Until further experience has been gained of the treatment of rheumatism at the new clinic established by the British Red Cross Society and elsewhere, I think it would be premature to consider the appointment of a committee for the purpose referred to by the hon. Member. But I shall be prepared to give sympathetic consideration to any practicable proposals which may be submitted to me by local authorities for the provision of facilities for treatment.

Institutions for Mental Patients.

Mr. KINLEY asked the Minister of Health the number of establishments in which lunatics were treated and the number of patients therein, showing the positions of those under local authority and private ownership, respectively.—Mr. GREENWOOD replied: The table indicates the number of institutions in which persons of unsound mind (voluntary and certified) are received, and the number of patients (voluntary and certified) under care on Jan. 1st, 1930, in England and Wales:—

Number of institutions	Type of institution.	Number of patients resident.
(1) .. 99	County and Borough Mental Hospitals	117,486
(2) .. 14	Registered Hospitals	2,493
(3) .. 54	Licensed Houses	2,964
(4) .. 1	Royal Naval Hospital	115
(5) .. 1	Military Hospital	37
(6) .. 1	Criminal Asylum	827

(1) Provided by local authorities.

(2) Supported wholly or partly by voluntary contributions, or by charitable gift or bequest or by applying excess of payments of some patients for or towards support, provision, or benefit of other patients.

(3) Institutions under private ownership.

(4), (5), (6) Provided by the Admiralty, War Office, and Home Office, respectively.

Beds in Wells Mental Hospital.

Mr. GOULD asked the Minister of Health the largest number of beds in any one room now in use in the Wells County Mental Hospital, Somerset.—Mr. GREENWOOD replied: There are 75 beds in one dormitory of a size which gives 600 cubic feet of space for each occupant.

Mr. GOULD: Does the right hon. gentleman regard the mass sleeping accommodation as conducive to the best interests of the patients?

Mr. GREENWOOD: Unfortunately it is the best accommodation that they have at the moment.

Mr. GOULD: Will the right hon. gentleman make representations to the Wells Mental Hospital asking them for an early change in the dreadful conditions of the sleeping accommodation?

Mr. GREENWOOD: I will consider that suggestion.

Medical Officers in Poor-law Institutions.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Health whether he had received any protests respecting the terms of his recent order affecting the relations of the master and medical officers in poor-law institutions.—Mr. GREENWOOD replied: The order to which the hon. Member refers has not yet been made, but has been published as a draft. I have received a number of representations in regard to the draft order which will receive my careful consideration.

The Virus of Psittacosis.

Mr. GRAHAM WHITE asked the Minister of Health if he could confirm the reported discovery and isolation of the virus of psittacosis at a London hospital.—Mr. GREENWOOD replied: The results obtained at this hospital have not yet been confirmed, but a great deal of work with the object of elucidating this disease is in progress, and I am hopeful of valuable results being obtained.

Lunacy Observation Wards.

Mr. ROBERT RICHARDSON asked the Minister of Health what would be the position of the lunacy observation wards, which at present formed a part of the poor-law infirmaries, after the poor-law guardians had been abolished; and would they be annexed to asylums or to voluntary hospitals.—Mr. GREENWOOD replied: The position of the observation wards will depend mainly upon the decision of the local authority in regard to the purposes for which the infirmary will be used; but I would remind my hon. friend that a provision is contained in the Mental Treatment Bill now before the House which will facilitate the use of these wards for mental patients.

Children in Poor-law Institutions.

Mr. JOWETT asked the Minister of Health the number of children of school age in poor-law institutions, including cottage and other children's homes, on the most recent date for which the information was available.—Mr. GREENWOOD replied: The number of children between 3 and 16 years of age in England and Wales in receipt of relief in poor-law institutions, including cottage and other children's homes and other separate establishments for children on the night of Jan. 1st, 1929, was 38,476. The returns received in my department do not distinguish children of school age.

MONDAY, MARCH 17TH.

Price of Quinine in India.

Major GRAHAM POLE asked the Secretary of State for India whether his attention had been drawn to the statement of the director of the botanical survey of India, in his report for 1928–29, to the effect that the poor in India were unable to purchase quinine at the price at which it was being sold in India, and that charitable dispensaries had to turn malaria-stricken patients away empty or with inadequate doses; and whether, in view of this position, the Government of India were taking any steps to reconsider its policy in regard to the cultivation of cinchona in India and the manufacture and distribution of quinine.—Mr. WEDGWOOD BENN replied: I have not seen the report referred to, but am asking the Government of India for an up-to-date report on the position.

Safety of British Hospital at Nanning.

Sir KINGSLEY WOOD asked the Secretary of State for Foreign Affairs whether he would make inquiries concerning the safety of some 20 girls attached to the Bible Churchmen's Girls' Orphanage, near Lungchow, which was recently looted by Communists; whether he would ascertain, in view of the safety of the occupants of the British Bible Churchmen's Hospital at Nanning, what was the present position there; and whether there had yet been any invasion by Soviet forces in this district.—Mr. HENDERSON replied: I have already made inquiries, and from such information as I have been able to obtain it would seem that the girls in question, who are Chinese, have been released. There is a scarcity of news from Nanning where the hospital in question is situated, but according to the latest reports foreigners are not thought to be in danger there at present, though unsatisfactory conditions prevail in the province generally. There has been no invasion by Soviet forces. The nearest point in this district to Soviet territory is about 2000 miles from the Soviet frontier.

Protection of Civilians against Gas Attack.

Mr. DAY asked the Prime Minister whether any decision had been come to with reference to the problem of the protection of the civil population against gas attack; whether any scheme had been prepared for the protection of the civil population in these emergencies in future; and whether this scheme had been communicated to the local authorities.—Mr. MACDONALD replied: As I have said in answer to previous questions on this subject, in view of the ratification, last year, of the Geneva Gas Protocol of 1925 by most of the important European States, including this country, and also in view of the other international undertakings and agreements for the preservation of peace, I do not think the present time opportune to press on with plans dealing with gas attack. It is, I think, well known, and has been stated in the House on more than one occasion, that considerable preparatory work had been done by the Committee of Imperial Defence upon this problem prior to the ratification of the Protocol. This work will always be available should it be necessary, at any time, to reconsider our position.

Disease Germs in Telephone Mouthpieces.

Mr. REMER asked the Postmaster-General if his attention had been called to the danger, according to medical opinion, of disease caused by germs lodged in telephone mouthpieces; and if his officers were considering any device to overcome this danger.—Mr. VIANT (Assistant Postmaster-General) replied: The view of the Post Office—based on competent medical opinion—is that the danger of infection from the use of telephones is negligible, although it is recognised that comfort and the general amenities demand that telephones should be kept reasonably clean. This is usually effected by subscribers themselves. So far as public call offices are concerned, it is the practice to disinfect the mouthpieces and earpieces at regular intervals, the frequency depending on the use made of the call office.

TUESDAY, MARCH 18TH.

Insanitary Conditions in Post Office Store.

Mr. WILLIAM BROWN asked the Postmaster-General whether he was aware of the outbreak of boils and carbuncles among the staff of the mechanical transport section of the Post Office stores housed in the old workhouse in Endell-street; whether he was aware that the accommodation in this building was infested with mice, which were themselves affected with skin diseases; whether he was aware that in the same building there was a bacteriological laboratory; and whether he would either remove his staff from the building or take steps to remove the vermin and the bacteria.—Mr. LEES-SMITH replied: This matter has been engaging my attention. It is the case that some members of the staff referred to have suffered from boils and carbuncles. A medical inspection has been made, and I am advised that there is no connexion between this outbreak and the proximity of a bacteriological laboratory or the presence of mice in the building. In view of the possibility that infection may have been spread by contact, disinfectant is now being used; and I am taking up the question of improving the sanitary arrangements. Urgent measures are being taken to exterminate the mice.

HOSPITAL COSTS.—Last year at Addenbrooke's Hospital, Cambridge, the average cost per week of each in-patient (3836) was £2 15*s.* 9½*d.*, an increase of 3*s.* 4½*d.* The average cost of each out-patient (12,104) was 6*s.* 9¾*d.*, an increase of 4½*d.* At the Hampshire County Hospital, Winchester, the daily cost of each out-patient was 8*s.* 10*d.*, an increase of 5*d.* The cost of each out-patient, which had been estimated at 5*s.*, is now found by accountants to be 7*s.* 3*d.*—At the Bucks County Mental Hospital, Stone, the rate for the maintenance of patients from contributing unions was 19*s.* 10*d.* per head per week in the first half of last year and 19*s.* 3*d.* in the second half.—The cost per bed per week at Skegness Cottage Hospital (208 in-patients) was £1 19*s.* 0½*d.*—The weekly cost of an in-patient at Lymington Cottage Hospital (486 patients) was £2 3*s.* 2*d.*; at Horsham Cottage Hospital (482 patients) it was £3 8*s.* 10*d.*—At the Minehead and West Somerset Hospital last year the average weekly cost of each in-patient (812) was £2 18*s.* 10*d.* At the Pembroke County War Memorial Hospital the cost (646) was £2 8*s.* 5*d.* The cost of an in-patient at the Staffordshire General Infirmary, Stafford (1549 patients, average stay 15½ days), was £6 5*s.* 6*d.*, "less an estimated amount for out-patients." The Melton and District (Lincs) War Memorial Hospital spent £6 5*s.* per in-patient (599), a reduction of 18*s.* 1*d.*, X ray expenditure excluded. At Stroud General Hospital 789 in-patients cost £2 16*s.* 2*d.* per head per week.

Medical News.

UNIVERSITY OF CAMBRIDGE.—On March 14th the following degrees were conferred:—

M.B. and B.Chir.—R. M. Windeyer* and T. N. Parish.

* By proxy.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of the Council was held on March 17th, with Lord Moynihan, the President, in the chair.

Licences in Dental Surgery were granted to the following candidates, who were successful in the recent examination:—

C. G. Baker, John Barnes, David Bengis, V. S. A. Biggs, John Carter, Q. A. Davies, A. M. Garman, A. T. Gibb, A. J. D. Gibbings, D. D. C. Hamilton, William Headridge, H. R. Heald, H. R. Heathcote, J. A. C. Hunter, C. E. W. Kurtz, F. G. Lilley, W. O. Littler, A. C. R. McLeod, Mary S. MacWilliam, H. C. Norman, G. B. Palmer, J. P. Price, F. I. Robertson, J. D. Sellers, H. M. Selmann, G. B. Shaw, F. A. Sickelmore, J. A. Singer, K. P. Smith, M. L. Smith, J. L. Thornton, J. H. White, R. E. Wiles, and W. R. J. Wood.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Physicians, to 16 candidates.

Mr. C. H. Fagge was appointed the representative of the College to serve on a subcommittee of the People's League of Health to consider the subject of the Cause and Eradication of Bovine Tuberculosis.

Mr. Ernest W. Hey Groves was asked to represent the College at the annual meeting of the Czecho-Slovakian Orthopædic Society.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Feb. 26th an interim grant of £75 was made out of the Thomas Smythe Hughes Medical Research Fund to Miss Kathleen Chevassut for continuation of the research on disseminated sclerosis which she described in THE LANCET of last week.

Applications are invited for grants from this and from the Beaverbrook Medical Research Fund, and from the Dixon Fund for assisting scientific investigation. Particulars are obtainable from the Academic Registrar.

Regulations for the Academic Diploma in clinical pathology have been approved and may be had from the Academic Registrar.

UNIVERSITY OF LIVERPOOL.—On June 5th the honorary degree of D.Sc. will be conferred on Mr. George Barger, F.R.S., professor of chemistry in relation to medicine in the University of Edinburgh.

UNIVERSITY OF EDINBURGH.—The honorary degree of LL.D. is to be conferred on Sir Thomas Barlow, F.R.S., consulting physician to University College Hospital; Sir Otto Beit, founder of the Beit memorial fellowships for medical research; Sir William Hardy, F.R.S., Director of Food Investigation in the Department of Scientific and Industrial Research; Sir David Wallace, consulting surgeon to the Edinburgh Royal Infirmary; and Prof. Karel Wenckebach, of Vienna.

CAMBRIDGE GRADUATES' MEDICAL CLUB.—The annual dinner of this club will be held at the May Fair Hotel, London, W., on March 27th at 7.30 for 7.45 P.M., with Dr. H. Morley Fletcher in the chair. The hon. secretaries are Mr. Reginald M. Vick, 113, Harley-street, W.1, and Dr. F. G. Chandler.

ROYAL NAVY MEDICAL CLUB.—The annual dinner will take place at the Trocadero Restaurant, Piccadilly-circus, London, on Thursday, April 24th, at 7.30 P.M. for 8 P.M. Members who wish to be present are asked to inform the hon. secretary of the Club, Queen Anne's Chambers, Tothill-street, S.W.1., not later than seven clear days before that date.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting of this Society will be held at 11, Chandos-street, Cavendish-square, London, W., at 4 P.M., on Tuesday, April 8th. Dr. Percy C. Barham will open a discussion on the Difficulties of the Institutional Treatment of Alcoholism and Drug Addictions.

ENLARGEMENT OF RUGBY HOSPITAL.—It is proposed to spend between £20,000 and £25,000 upon additions and improvements to St. Cross Hospital, Rugby. A pavilion for treating tuberculous cases is to be substituted for the existing wooden hut, better accommodation is to be provided for nurses, and it is expected that £500 a year will be saved by a modern system of warming. The hospital's income last year exceeded £19,000; before the contributors' scheme was adopted it only slightly exceeded £12,000. Over £1000 was saved on the year's working.

CHRISTIE HOSPITAL, MANCHESTER.—An anonymous gift of £2000 has been received by the treasurer of the Christie Hospital (Cancer Pavilion and Home).

THE "HOPE JOURNAL."—Under the description of "the official journal of the Hope Hospital," Pendleton, the first number of this magazine has just been issued.

INTERNATIONAL LEAGUE FOR CAMPAIGN AGAINST TRACHOMA.—This league, which was founded at the Thirteenth International Ophthalmological Congress, will hold its next meeting at Geneva on July 28th. The president is Prof. Emile de Grósz, and the hon. secretary Dr. F. Wibaut, whose address is Budapest VIII., Mária-utca 39.

COURSE ON SURGICAL TUBERCULOSIS.—Under the direction of Dr. Etienne Sorrel, a course on the treatment of surgical tuberculosis will be held at the Hôpital Maritime de Berck-sur-Mer, Pas-de-Calais, France, from April 14th to 19th. Particulars may be had from Dr. Delahaye at the hospital.

EXTENSION OF WEST MIDDLESEX HOSPITAL.—Sir John Ferguson, M.P., has laid the foundation-stone of a new maternity block in the grounds of this poor-law institution. The building will include five wards of four beds each, one of five beds, and six single bed wards, and accommodation for midwifery pupils.

YORK COUNTY HOSPITAL.—The Military Tattoo of the Northern Command last year produced £1400 for this hospital. So many main roads converge upon York that the hospital receives a considerable number of road accidents cases. Last year it treated 141 such cases at a cost of £1269, towards which £413 was received.

THE KING AT THE LONDON HOSPITAL.—On Tuesday last week the King and Queen paid a private visit to this hospital so as to see it at work in normal conditions. Their Majesties visited five wards, including a children's ward, and inspected two new covered ways provided by Sir William Paulin and his daughter to avoid the necessity of the nurses crossing the garden or passing through the wards on their way to the nurses' home. In the radium laboratory they watched the making of radon.

INSTRUCTION ON BIRTH CONTROL.—A conference on the giving of information on birth control by public health authorities will be held at the Central Hall, Westminster, on Friday, April 4th. It is stated that 59 local authorities have asked the Ministry of Health to allow them to provide facilities for giving such information. The conference is being organised by a group of societies and tickets may be had from the secretary, 9, Parliament Mansions, London, S.W. 1. Among the speakers will be Mr. Harold Chapple, senior obstetric surgeon to Guy's Hospital, and Dr. Maitland Radford, medical officer of health for Shoreditch.

OXFORD OPHTHALMOLOGICAL CONGRESS.—This Congress will meet at Keble College, Oxford, on Wednesday, July 9th, and will go on till the 12th. Dr. H. M. Traquair, Sir Farquhar Buzzard, and Prof. J. A. Gunn will open a discussion on Toxic Amblyopia; Sir Oliver Lodge, F.R.S., will give an address on Modern Theories on the Nature of Light; Prof. Artur Schüller, of Vienna, will speak on Recent Developments in Radiology associated with Ophthalmology, and Prof. Jules Gonin, of Lausanne, on Detachment of the Retina and its Treatment; and the Doyne Memorial Lecture will be given by Dr. Harry Friedenwald, of Baltimore, on Pathological Changes in the Retinal Blood-vessels and their Significance. The hon. secretary of the Congress is Mr. C. G. Russ Wood, 12, St. John's-hill, Shrewsbury.

SCHOLARSHIPS AND GRANTS FOR SCIENTIFIC RESEARCH.—The Council of the British Medical Association is prepared to receive applications for an Ernest Hart Memorial Scholarship, of £200, and three research scholarships, each of £150 per annum. These are given to candidates whom the Science Committee of the Association recommends for research in any subject (including State Medicine) relating to the causation, prevention, or treatment of disease. Each is tenable for one year from Oct. 1st, and reappointment is possible for not more than two additional terms. Scholars may hold junior appointments at a University, medical school, or hospital, provided the duties of these appointments do not interfere with their work as scholars. The Council also invites applications for Grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose to study problems directly related to practical medicine. Applications for Scholarships and Grants must be made not later than May 24th, on a form obtainable from the Medical Secretary of the Association, B.M.A. House, Tavistock-square, London, W.C.1.

PLYMOUTH HOSPITALS.—The amalgamation has been proposed of the South Devon and East Cornwall, the Central, and the Royal Albert Hospitals. The last-named is at Devonport.

MANCHESTER NORTHERN HOSPITAL.—At the seventy-fourth annual meeting it was reported that £81,620 had been received towards the £150,000 needed for the new hospital, for which the new site is being prepared. The new hospital will be a general one, and not one confined to women and children.

ST. ANDREW'S HOSPITAL, DOLLIS HILL.—Last November the number of beds was increased from 52 to 74, and new wards and a nurses' home are now being erected at a cost of £30,000. The hospital, which last year received 1218 in-patients, is under the care of Sisters of Mercy, and is intended chiefly for members of the professional and middle-classes of any nationality and creed.

NATIONAL GARDENS SCHEME.—The movement for throwing open famous gardens for the benefit of the Institute for District Nursing and other nursing institutions has again been conspicuously successful. Last year it produced £7765, an increase of nearly £1,000 upon the amount obtained in 1928.

THREE GENERATIONS OF HOSPITAL SERVICE.—Dr. F. R. Mallett, President of the Bolton Infirmary, has been entertained at a complimentary dinner by the committee and honorary medical staff of the institution, in recognition of the services of his family and himself. Dr. Mallett's grandfather became connected with the hospital 113 years ago, and his own service extends over 35 years.

CAMDEN-ROAD SUNLIGHT CLINIC.—Sir William Hale-White, president of the medical advisory committee of the new Institute of Ray Therapy at 152-154, Camden-road, described the objects of the clinic at the opening ceremony on March 13th. The clinic has its origin [1] in the generous gift of Mr. G. F. Kimber, who subscribed £10,000 for building and equipment. Patients must bring a certificate from their family doctors, on which an estimate of their financial standing will be noted; they will be charged, according to their means, sums ranging from 1*s.* to 5*s.* for a treatment, and in necessitous cases treatment will be free. As the Institute is primarily for the benefit of poor persons, patients with private means will not be accepted. The three objects of the Institute are treatment, training, and research; cases were under treatment, even before completion of building operations, and over 200 patients have been treated since Jan. 9th. The London County Council school service and care committees are arranging for the treatment of groups of children, and a central room offers accommodation for group treatment on a large scale. In all, there are 18 lamps of the most recent pattern, and an X ray apparatus in addition; the upper floor of the building is divided into cubicles for special forms of treatment; two of these are devoted to the treatment of rheumatism, one to skin diseases, one to conditions of the nose and throat, one to tuberculosis, one to asthma, one to eye diseases, and two to gynæcological conditions. Much of the arduous work of preparation has been performed by Dr. William Beaumont and his wife, who have shown untiring energy since the inception of the scheme.—The Lord Mayor, Sir William Waterlow, said he understood that one of the purposes of the clinic was to stabilise the uses of ray therapy and to estimate its capacity for good. This would be the concern of the medical staff and the voluntary advisory committee. For his part he liked to think of clinics of this type as the poor man's Riviera. The work would not only include treatment and cure of the sick but reinvigoration of those deprived of sufficient sunlight—that prevention of disease which was better than cure. He declared the clinic open.—Mr. Kimber, in proposing a vote of thanks to the Lord Mayor, said the clinic had been born of a remark made by the hon. medical director two years before; speaking of ray therapy he had said: "If only we had the money there's no telling what we could do." The clinic owed much to the generous help of many friends, in service, goods, and money; the Hearts of Oak Benefit Society had made a grant towards the upkeep of the first 18 months.—A tour of the building was then made by the guests, and patients were observed receiving treatment in the cubicles. The water-cooled tungsten lamp for the treatment of asthma serves a double purpose, since its fumes are in themselves regarded as beneficial to the condition. The lamp for the treatment of eye diseases can be focused so that only a small portion of the lid or cornea need be under treatment at a time, without danger to the rest of the eye. Other new designs of apparatus were demonstrated, including an infra-red lamp.

[1] See THE LANCET, Feb. 15th, p. 367.

NORTH ORMESBY HOSPITAL.—It is proposed to enlarge this Middlesbrough hospital at a cost of £30,000. It has already been twice extended since the war. It is claimed to have been the first English cottage hospital, but it was not founded until 1857. Warwick College hospital goes back to 1823, that at Frodingham, Lincolnshire, to 1844, and that at Ripon to 1850.

INFECTIOUS DISEASES HOSPITALS IN THE WEST RIDING.—Basing their views upon a report from the county medical officer, the public health committee of the West Riding county council recommend that the urban and rural districts should be grouped into a number of hospital areas, with ten groups for general infectious diseases and seven for small-pox. It is estimated that the cost will be £330,000. It is further recommended that the county council should contribute towards the cost of erecting new and enlarging existing hospitals.

BRISTOL GENERAL HOSPITAL.—Although there was last year an increase of income under nearly every heading, the excess of ordinary expenditure over ordinary income was £10,544. The adverse balance in 1928 was £12,197, and in 1927 £13,465, a total of more than £36,000 in three years. Most of the legacies received last year had to be used to meet the deficit. New male and children's wards and a new operating theatre are about to be built at a cost of £17,000.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—At the annual meeting last week it was stated that during the past year more beds had been opened and new departments installed. The increase of work in a building more than double the size of the old hospital increased the expenses by £13,000, which has, however, been more than met. The Guild of Gratitude has been "heartily received" by the patients, and now has more than 15,000 members, who have collected over £3000 in pence and shillings.

PUBLIC ASSISTANCE ARRANGEMENTS IN KENT.—Dr. Alfred Greenwood, the county medical officer, and Mr. John Moss, the county public assistance officer for Kent, have made a survey of the poor-law institutions in the county, and have prepared a joint report suggesting some measure of classification now or later. They observe that if a few institutions are developed on hospital lines there should be available in many parts of the county a specialised institution which should provide the skilled treatment required. To assist classification it might be found possible to appropriate suitable poor-law institutions, or portions of them, for the accommodation of groups of mental defectives who have hitherto been scattered about the county. Where in a particular area there are two or three institutions it should be possible to develop one of them on hospital lines. Classification by institution, it is pointed out, involves the necessity of an effective ambulance service, so that the sick can be transported rapidly to the place where especially skilled nursing is available.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, March 24th.—8 P.M., ODONTOLOGY. Paper: Sir William Willcox: Dental Sepsis—a Retrospect. Casual Communication: Mr. F. Coleman: Buried Mandibular Teeth with Crowns in Occlusion.
TUESDAY.—5 P.M., MEDICINE. Discussion on Syphilitic Aortitis. Opener: Prof. Erich Leschke (Berlin). Followed by Dr. J. Parkinson, Dr. J. Cowan, and Dr. T. F. Cotton. Other speakers will also take part.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Papers: Dr. P. J. Cammidge: The Hereditary Transmission of Hypoglycæmia in Mice. Mr. S. R. Douglas: The Preparation of Tuberculin. Mr. F. C. Minett: The Clinical Forms and Bacteriology of Bovine Mastitis. Dr. G. Scott Williamson: Prophylaxis against Goitre in Fish Hatcheries.
THURSDAY.—8.30 P.M., UROLOGY. Clinico-Pathological Evening.
FRIDAY.—DISEASE IN CHILDREN. Clinical Meeting at King's College Hospital, Denmark Hill, S.E. 4.15 P.M., Tea will be served. 4.30 P.M., Cases will be shown. 5 P.M., Discussion on Cases. 8 P.M., EPIDEMIOLOGY. Paper: Dr. William Fletcher: Typhus-like Diseases of Unknown Ætiology.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, March 24th.—8.30 P.M., Discussion on Coliform Infections of the Genito-Urinary Tract, to be introduced by Sir Thomas Horder and Mr. Kenneth Walker.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, March 28th.—8.30 P.M., Papers will be read by Dr. D. Kathleen Brown and Dr. B. B. Sharp on Vulvo-vaginitis. A Discussion will follow.

HUNTERIAN SOCIETY.
MONDAY, March 24th.—7.30 P.M., the Third Dinner Meeting (at Simpson's Restaurant, 2 and 3, Bird-in-hand Court, 77, Poultry, Cheapside). 8.30 P.M., Discussion on Athletics in Schools, to be opened by Dr. L. R. Lempriere, Dr. A. I. Simey, Dr. Helen Boyle, Mr. H. M. Abrahams, Dr. Adolphe Abrahams, and Group-Captain Martin Flack, R.A.F.

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, March 25th.—5.15 P.M., Dr. Charles Singer: Inductive Philosophy and Some of Its Instruments.
THURSDAY.—5.15 P.M., Mr. J. B. S. Haldane: Some Problems of Genetics.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 25th.—5 P.M., Dr. Carey F. Coombs: Syphilis of the Heart and Great Vessels. (Second Lumleian Lecture.)
THURSDAY.—5 P.M., Dr. Carey F. Coombs: (Last Lumleian Lecture).

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ousoley-road, Balham, S.W.
WEDNESDAY, March 26th.—4 P.M., Mr. Harold D. Gillies: Plastic Surgery. (Lantern lecture.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.
THURSDAY, March 27th.—9 P.M., Dr. Clayton: Fibrositis and Its Treatment.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 24th, to SATURDAY, March 29th.—MEDICAL SOCIETY Lecture Room, 11, Chandos-street, Cavendish-square, W. Tues., 4 P.M., Lecture by Mr. A. Tudor Edwards: Modern Surgical Developments in Chest Disease. No fee.—VICTORIA HOSPITAL FOR CHILDREN, Tite-street, S.W. Thurs. at 2 P.M., Demonstration by Mr. Max Page. No fee.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E.—Special Post-graduate Course in Medicine, Surgery, and Gynæcology. Operations and Lecture-demonstrations in the Wards and Out-patient Departments.—WEST END HOSPITAL FOR NERVOUS DISEASE, 73, Welbeck-street, W. Special post-graduate course of lectures and clinical demonstrations. Daily at 5 P.M.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Post-graduate course in Venereal Disease. Clinical instruction daily in the afternoons and evenings.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, March 24th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose, and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases. Clinics. Operations.

NATIONAL HOSPITAL POST-GRADUATE COURSE, Queen-square, W.C.
MONDAY, March 24th.—12 noon, Dr. Greenfield: Pathology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Adie: Forms of Muscular Atrophy.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Acute and Subacute Myelitis.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Neuralgia in the Distribution of the Cranial Nerves.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Disseminated Sclerosis.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
TUESDAY, March 25th.—5 P.M., Dr. J. A. Willett: The Importance of Antenatal Care.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.
FRIDAY, March 28th.—4 P.M., Mr. Harold Kisch: Nasal Obstruction.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, March 26th (at St. John's Hospital, 49, Leicester-square, W.C.)—4.15 P.M., Clinical Cases. 5 P.M., Dr. J. O'Donovan: The Significance of Pattern Reaction in Dermatology.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square, W.C.
WEDNESDAY, March 26th.—6 P.M., Mr. J. G. Turner: Extraction.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, March 25th.—5 P.M., Dr. H. MacCormac: Malignant Growths of the Skin.
THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Benign Growths of the Skin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, March 25th.—4.15 P.M., Mr. A. H. Burgess: Spinocain Spinal Anæsthesia.
FRIDAY,—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

ANCOATS HOSPITAL POST-GRADUATE COURSE, Mill-street, Manchester.
THURSDAY, March 27th.—4.15 P.M., Dr. N. Kletz: Affections of the Kidneys with Special Reference to Nephritis.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, March 28th.—3.30 P.M. (at the Royal Infirmary), Mr. J. H. Cobb: Nasal Sinusitis.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, March 26th.—4.15 P.M. (Royal Infirmary), Dr. J. F. Smith: Skin Cases.

Appointments.

BADENOCH, A., M.B., Ch.B.Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for East Linton (East Lothian).

FRANKS, C., M.D. Brux., L.S.A., D.P.H., Medical Officer of Health, Durham County, and MCINTYRE, J., M.D., Ch.B. Edin., D.P.H., Deputy Medical Officer of Health.

KIEP, W. H., M.B., Ch.B. Glasg., to be a Specialist Medical Referee under the Workmen's Compensation Act, to take Ophthalmic cases arising in the Districts of the Bradford, Keighley, Skipton and Settle, Halifax and Huddersfield County Courts.

MCKEGGIE, J. W., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health, West Hartlepool.

M'POLIN, M.D., N.U.I., D.P.H., Medical Officer for Limerick County.

SEWELL, D. LINDLEY, M.B., B.S. Lond., M.R.C.S., Honorary Surgeon-Laryngologist to the Manchester Radium Institute.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. At rate of £140.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.
Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. Also Asst. H.P. Each at rate of £100.
Bengal, Burdwar District, Asansal Mining Settlement.—Chief Sanitary Officer. Rs.1000 monthly.
Blackburn and East Lancashire Royal Infirmary.—4th H.S. £130.
Bolton Infirmary and Dispensary.—H.S. At rate of £150.
Bootle Borough Hospital, Derby-road.—Jun. H.S. At rate of £150.
Cardiff Royal Infirmary.—H.S. to Ophthalmic Dept. At rate of £75.
Charing Cross Hospital, W.C.—Asst. Physician.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colonial Medical Services.—Medical Officers.
Connaught Hospital, Orford-road, E.—Sen. Res. H.S. At rate of £150. Also Jun. Res. H.S. At rate of £100.
Dartford, Kent, Darenth Training Colony.—Med. Supt. £1000.
Denbigh, North Wales Sanatorium, Llangwffan.—Third Asst. Res. M.O. £250.
Derby, Bretby Hall Orthopædic Hospital, nr. Burton-on-Trent.—Asst. M.O. At rate of £150.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £150.
Durham County Council.—Venereal Diseases M.O. £750.
East London Hospital for Women and Children, Shadwell, E.—Cas. O. At rate of £125.
Edinburgh Hospital for Crippled Children.—Surgeon. £1000.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £150.
Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £125 and £100 respectively.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Radiologist.
Hackney Hospital, High-street, Homerton, E.—Asst. M.O. £350.
Hertford County Hospital.—Res. Surg. O. At rate of £250.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. for County Branch Hospital, Tadworth, Surrey. At rate of £250.
Hull Royal Infirmary.—H.S. Cas. H.S. At rate of £150 and £130 respectively. Hon. Surgeon. Also Hon. Asst. Surgeon.
Inverness, Northern Infirmary.—H.P. and Jun. H.S. £100.
Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s. Each £120.
Jerusalem, St. John Ophthalmic Hospital.—Registrar.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool, David Lewis Northern Hospital.—Res. M.O. £100.
London Homœopathic Hospital, Great Ormond-street, and Queen-square, W.C.—Res. M.O. £100.
London Hospital, E.—Asst. Radiologist.
London Lock Hospital, 91, Dean-street, W.—1st and 2nd H.S.'s. Each at rate of £200. Also Surg. Reg. £100.
London Lock Hospital, 283, Harrow-road, W.—Surg. Reg. £100.
London Temperance Hospital, Hampstead-road, N.—Res. M.O. Also H.P. At rate of £175 and £100 respectively.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester, Ancoats Hospital.—Res. Surg. O. £200.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Manchester Royal Infirmary.—Hon. Asst. Surgeon.
Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Hon. Radiologist.
Metropolitan Hospital, Kingsland-road, E.—Physician to Dept. for Diseases of Skin.
Middleton-in-Wharfedale Sanatorium, nr. Ilkley.—Jun. Res. M.O. £250.
Newcastle-upon-Tyne, City Mental Hospital, Gosforth.—2nd Asst. M.O. £400.
Northern Rhodesia, Roan Antelope Copper Mines, Ltd.—2nd M.O. £900–£1000.
Norwich, Norfolk and Norwich Hospital.—H.S. to Special Depts. Also Cas.O. and H.S. Each £120.
Nottingham General Hospital.—2nd Cas. O. At rate of £150.
Oswestry, Shropshire Orthopædic Hospital, &c.—Two H.S.'s. Each at rate of £200.
Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Phys. Also Sen. H.P., Sen. H.S., and Special H.S. Each at rate of £120. Also Jun. H.P., and Two Jun. H.S.'s. Each at rate of £90.
Rampton State Institution for Mental Defectives, near Retford, Notts.—4th M.O. £547 10s.
Reading, Royal Berkshire Hospital, Langley Hill, Calcot.—H.S. At rate of £150.
Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Royal Northern Hospital, Holloway-road, N.—Pathologist. £750. Also Asst. Pathologist. £500.
St. Andrew's Hospital, Dollis Hill, N.W.—Sen. and Jun. R.M.O.'s.
St. Mary's Hospital, W.—Obstetric Registrar. £50.
St. Mary's Hospital for Women and Children, Plaistow, E.—Asst. Res. M.O. At rate of £120. Also Clin. Asst. for Medical Out-patients Dept.
Salford Royal Hospital.—H.S. At rate of £125.
Shanghai Municipal Council, P.H. Dept.—Asst. Pathologist. 650 Taels per mensem.
Sheffield, Children's Hospital, Western Bank.—3rd Res. M.O. £100.
Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.
Sheffield Royal Infirmary.—Ophthalmic H.S. At rate of £80.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £130 to £160.
Stockport County Borough, Stepping Hill Hospital.—Res. Asst. Med. Supt. &c. £350.
Stockport Infirmary.—Res. Surg. O. £250.
Surrey County Council.—Asst. M.O. £600.
Tiverton Hospital, Devonshire.—H.S. At rate of £100.
Watford, Herts, Peace Memorial Hospital.—2nd Res. M.O. At rate of £150.
West Bromwich and District General Hospital.—Cas. H.S. At rate of £200.
Westminster Hospital, Broad Sanctuary, S.W.—Hon. Asst. Administrator of Anæsthetics.
Woolwich and District War Memorial Hospital, Shooters-hill.—H.P. and H.S. Each at rate of £125.
Willesden General Hospital, N.W.—Clin. Assts. to Surgical Out-patients' Dept.
Winchester, Royal Hampshire County Hospital.—Hon. Ophth. S.

Births, Marriages, and Deaths.

BIRTHS.

ALDEN.—On March 13th, at Woodstock-road, Oxford, the wife of Dr. J. W. Alden, of a son.

BALFOUR.—On March 15th, at Downholm, Ringmer, Sussex, the wife of Ivor H. C. Balfour, M.R.C.S., of a daughter.

GIBSON.—On March 11th, at Amalfi, Torquay, the wife of Paul C. Gibson, M.D., of a daughter.

MOLESWORTH.—On March 13th, at Cleveland House, Brixham, Devon, the wife of Dr. Eric M. Molesworth, of a son.

POTTS.—On March 16th, at The Gables, Bracknell, the wife of Dr. C. Lawrence Potts, of a son.

SCOTT.—On March 14th, at Abbotsford, Capel-road, East Barnet, the wife of C. Mervyn Scott, M.R.C.S., L.R.C.P., of a daughter.

SOLOMONS.—On March 16th, at Meadway, Hampstead Garden Suburb, N.W., the wife of Dr. Barnet Solomons, of a son.

MARRIAGES.

AINSWORTH—MCKINLEY.—On March 4th, at West Kirby Presbyterian Church, Richard Murray Ainsworth, M.B., M.R.C.S., to Sarah Margaret, second daughter of Mrs. A. B. McKinley, of West Kirby, Cheshire.

DEATHS.

ARMIT.—On March 12th, in Sydney, Henry William Armit, M.R.C.S., L.R.C.P., Editor of the *Medical Journal of Australia*, younger son of the late William Armit, formerly Secretary to the Hudson's Bay Company, aged 59.

FAGAN.—On Saturday, March 15th, at Highgate, Arthur Roberts St. Leger Fagan, M.R.C.S., L.R.C.P., in his 68th year.

LEVICK.—On March 8th, George Kenny Levick, M.B., B.S., of Havant, Hants, in his 62nd year.

PATON.—On March 11th, at Leighton Buzzard, Frederick Erskine Paton, M.B., of St Margaret's, Banbury-road, Oxford.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE TEACHING OF PARENTCRAFT.

AT the annual meeting of the National Baby Week Council on March 12th Dr. H. K. Waller opened a discussion on the question: "How can a knowledge of parentcraft be extended to parents whom the existing welfare services do not reach?" He suggested the foundation of more clinics for subscribers, on the plan of the Babies' Club at Chelsea; the parents who attended the club were usually in a position to pay a subscription of £5 5s. yearly. An absence of poverty did not necessarily mean knowledge of mothercraft, and many of these women were interested in modern methods and anxious to learn. There was no reason to suppose that such clinics would interfere with the work of the family doctor, but it must be guaranteed by every clinic that only preventive measures would be discussed; mothers must be advised to take sick children to the family doctor. At the same meeting Mrs. Eva Hubback described a clinic of the kind which is to be opened at Hampstead Garden Suburb, and Dr. Margaret Emslie spoke of another where subscriptions were lower than those advocated by Dr. Waller, but which was not self-supporting. Mr. E. B. Turner reminded the Council that the representative meeting of the British Medical Association had expressed disapproval of these clinics. The family doctor with his knowledge of the parents and the home was, he said, the proper person to instil the principles of mothercraft. The subscription to the clinic would be better spent in summoning him for an equal number of attendances. Dr. D. H. Geffen replied that the general practitioner was not suited to carry on the work of the clinics, which included infant psychology, preparation of food, and knitting. The great object of such a clinic was to secure cases of illness early and to send them to the family doctor. In any event, nothing should be considered before the welfare of the mother and child, not even the position of the medical practitioner. Mr. Turner rejoined that a sufficient medical service would abolish the need for clinics entirely.

TONICO RAZOR PASTE.

Dr. F. W. Cory has called our attention to a preparation designed to give a keen edge to such articles as microtomes, lancets, and razors. It is described as non-abrasive and antiseptic and consists of two pastes, one to be used on the rough side of the strop for sharpening and the other on the smooth side for finishing. Dr. Cory speaks of a "tonic action" by which the "tired" metal is revived so that the instrument can be used every day without resting. The preparation which is marketed by Messrs. Osborne and Garrett, Frith-street, London, can be obtained from chemists and barbers.

HERO WORSHIP IN SURGERY.

To the Editor of THE LANCET.

SIR,—In the course of the Hunterian Oration (THE LANCET, Feb. 22nd, p. 390) Prof. Hey Groves makes the following statement. "We have also to deplore the loss of the last known descendant of the Hunter family in the person of Miss Helen Hunter Baillie, the great-grand-niece of John Hunter, who died in Feb., 1929, at the age of 86."

May I point out that this is incorrect. This great lady was the last of her generation—the third generation—but the children of her two married sisters are still alive and are great-great-grand-nieces of John Hunter. These are the children of Mrs. Oliver of whom four are alive, and the three daughters of Mrs. Maconechy. These are the fourth generation. The four children of Miss Muriel Maconechy—my wife—are the sole representatives of the fifth generation. The accompanying tree makes this descent more clear than it can be expressed in writing.

I am, Sir, yours faithfully,

Guildford, March 1st, 1930. T. B. JOBSON.

APPLES FOR DYSENTERY.

To the Editor of THE LANCET.

SIR,—Your article in THE LANCET of March 8th, pointing out how old popular remedies turn up again, and especially the revival of the use of apples in dysentery and typhoid, has a peculiar interest for me. When assisting at the epidemic of typhoid which occurred at Worthing towards the end of last century, I was called to see a patient—a strict vegetarian—who declined to be dieted in the ordinary way, but insisted on having large numbers of roasted apples. I anxiously awaited the outcome. The patient did so well that I began to adopt a similar diet in other cases with the most gratifying results. On my return to London I read a paper about the epidemic before the St. George's Hospital Hunterian Society, in which I pointed out that cases dieted in this way were very seldom constipated, and consequently that laxatives and enemata were hardly ever required; also that the patients were much less emaciated.

A few days after reading my paper my attention was drawn by Dr. Cyril Ogle to an article of Sir William Jenner's in which he had pointed out that the pulp of apple was an excellent thing for typhoid patients; in fact, that my treatment was an old remedy turning up again. May I add that I used to order the apples to be pulped and passed through a colander; that cream, whipped cream, or white of egg are useful adjuncts and a pleasant variety for the patient.

I am, Sir, yours faithfully,

JOHN W. DICKSON.

Sloan-terrace Mansions, S.W., March 11th, 1930.

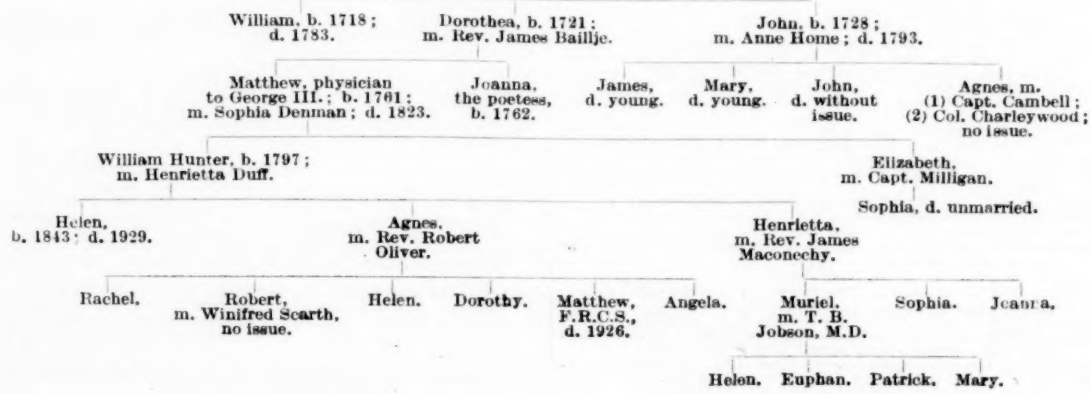
NEW PREPARATIONS.

DIGINUTIN.—Messrs. Burroughs Wellcome and Co. are also placing a stable preparation of digitalis on the market, a solution of the total glucosides of digitalis leaf free from inert extractive matters. Specimens biologically tested after storage for more than a year retain their activity, a quality which in many circumstances is distinctly valuable and one which clinical reports confirm. Other advantages claimed for the preparation are that the physiological standardisation of the solution is particularly accurate owing to the absence of inert vegetable matter, while the fact of it being in solution aids in the rapid response to the drug.

BROSEDAN (Coates and Cooper, 41, Gt. Tower-street, London, E.C.).—This is a German preparation described as a yeast preparation containing sodium bromide. Its administration is quite simple, one to three teaspoonfuls being given in half a breakfast cup of hot water at bed time. The drug has been found to have sedative qualities in neurasthenia and many nervous manifestations, and specially in the course of the treatment of epilepsy. In this connexion it has received favourable notice from clinical workers and medical journals in Germany.

Corrigendum.—In the annotation last week on Pulmonary Tubercle of Bovine Type (p. 584) line 14 should read: "in culture and its *high* virulence . . ."

PEDIGREE OF
John Hunter of Long Calderwood.


William, b. 1718; d. 1783.
Dorothea, b. 1721; m. Rev. James Baillie.
John, b. 1728; m. Anne Home; d. 1793.
Matthew, physician to George III.; b. 1761; m. Sophia Denman; d. 1823.
Joanna, the poetess, b. 1762.
James, d. young.
Mary, d. young.
John, d. without issue.
Agnes, m. (1) Capt. Cambell; (2) Col. Charleywood; no issue.
William Hunter, b. 1797; m. Henrietta Duff.
Elizabeth, m. Capt. Milligan.
Sophia, d. unmarried.
Helen, b. 1843; d. 1929.
Agnes, m. Rev. Robert Oliver.
Henrietta, m. Rev. James Maconechy.
Rachel.
Robert, m. Winifred Scarth, no issue.
Helen.
Dorothy.
Matthew, F.R.C.S., d. 1926.
Angela.
Muriel, m. T. B. Jobson, M.D.
Sophia.
Joanna.
Helen.
Euphan.
Patrick.
Mary.